

CENTRAL AND SOUTHERN FLORIDA PROJECT MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK, FLORIDA



**8.5
SQUARE
MILE
AREA**

ADDENDUM A
TO THE DRAFT GENERAL REEVALUATION REPORT
AND SUPPLEMENTAL ENVIRONMENTAL IMPACT
STATEMENT

MAY 2000



Department of the Army
Jacksonville District, Corps of Engineers
Jacksonville, Florida

HDR

HDR Engineering, Inc.

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MODIFIED WATER DELIVERIES TO
EVERGLADES NATIONAL PARK, FLORIDA**

8.5 SQUARE MILE AREA

ADDENDUM A

TO THE

**DRAFT GENERAL REEVALUATION REPORT AND
DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT**

**DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA**

May 2000



HDR Engineering, Inc.



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

May 9, 2000

TO THE RECIPIENTS OF THE DRAFT GENERAL REEVALUATION REPORT/DRAFT
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, PARTICIPATING AGENCIES
AND INTERESTED PUBLIC: REGARDING THE 8.5 SQUARE MILE AREA

Attached for your review and comment is information concerning the 6B feature of the 8.5 Square Mile Area (SMA) Alternatives. This revision is a preliminary response to public comments already received on the Draft General Reevaluation Report (GRR) with Draft Supplement to the Final Environmental Impact Statement (SEIS) on Modified Water Deliveries to Everglades National Park, addressing the 8.5 SMA feature.

The South Florida Water Management District (SFWMD), the local sponsor for this project, has requested a variation of Alternative 6B wherein the proposed alignment of the mitigation levee and seepage canal was moved somewhere between the proposed alignment in the GRR/SEIS and the current Save Our Rivers Phase I (SOR) land acquisition eastern boundary. The SFWMD is seeking an alignment for this alternative wherein the most optimal balance among the following is achieved: protection of wetlands within the 8.5 SMA, minimization of impacts to the landowners and agricultural interests, and minimization of impacts to the wetlands within the Everglades National Park.

Alternative 6C consists of an exterior and interior levee alignment as well as a seepage canal that generally follows the "Save Our Rivers (SOR)" boundary thereby providing the bounds of the analysis. Alternative 6D alignment is in between the SOR boundary (Alternative 6C) and the original Alternative 6B. The enclosed information contains the technical results to the same level of detail as in the GRR/SEIS, for Alternatives 6C and 6D.

If you know of anyone else who would be interested in reviewing the enclosed information, or any previous information on this project, please notify them of its availability from the U.S. Army Corps of Engineers (Corps) at the letterhead address. All of those who had received a copy of the GRR/SEIS, executive summary or CD will receive a printed version of the analyses and data pertaining to the optimized alignment. The information will also be posted at the Corps, Jacksonville District website: www.saj.usace.army.mil (click on "MWD And C111"). Comments will be received until the end of the comment period, which is May 30, 2000. Further information can be obtained from Mr. Elmar Kurzbach, at the letterhead address, or by telephone at 904-232-2325.

Sincerely,

James C. Duck
Chief, Planning Division

Traducción de la Carta Anterior:

May 9, 2000

División de Planificación
Rama Ambiental

AL PUBLICO QUE RECIBIO COPIA DEL BORRADOR DEL INFORME DE RE-EVALUACION GENERAL/BORRADOR DE DECLARACION DE IMPACTO AMBIENTAL SOBRE EL AREA DE LAS 8.5 MILLAS CUADRADAS, AGENCIAS PARTICIPANTES Y PUBLICO EN GENERAL.

Le incluimos para su revisión y comentario información adicional concerniente a la Alternativa 6B para el proyecto del Area de las 8.5 Millas Cuadradas (8.5 SMA). Esta revisión y responde en forma preliminar a los comentarios del público ya recibidos en referencia al Borrador del Informe de Re-evaluación General ("General Reevaluation Report," GRR) y el Borrador Suplementario a la Declaración de Impacto Ambiental (SEIS) para el Proyecto de Desvío Modificado de Aguas hacia el Parque Nacional Everglades (Modified Water Deliveries to Everglades National Park, en referencia al 8.5 SMA).

El auspiciador local de este proyecto, the South Florida Water Management District, (SFWMD), solicitó una variación de la Alternativa 6B, según la cual la alineación propuesta para el dique de mitigación y el canal de exfiltración fué movida a una ruta intermedia entre aquella propuesta en el GRR/SEIS y el lindero éste de adquisición de tierras de la Fase I de "Save Our Rivers" (SOR). El SFWMD busca el desarrollo de una alineación de dique/canal que optimice el balance entre la protección de las tierras húmedas dentro del 8.5 SMA; a la vez que minimice los impactos adversos sobre el Parque Nacional de los Everglades, los dueños de tierras y sobre los intereses agrícolas.

La Alternativa 6C consiste en una alineación de dique exterior e interior conjuntamente con un canal de exfiltración, todos los cuales siguen en general el lindero del SOR y de ese modo proveen la delimitación del área donde se llevará a cabo el análisis. La Alineación de la Alternativa 6D cae entre el lindero del SOR (Alternativa 6C) y la Alternativa 6B original. La información aneja contiene los resultados técnicos al mismo nivel de detalle que se encuentran en el GRR/SEIS de la Alternativa 6C y la 6D.

Si Ud conoce a otra persona que pudiera tener interés en revisar la información incluída, o cualquier otra información previa relacionada a este proyecto, le rogamos que deje saber a la persona que la información está disponible para ser enviada al solicitarla a la dirección del cabezal de esta carta. Toda persona que recibió copia del GRR/SEIS, del Resumen Ejecutivo o del "CD" recibirá una copia impresa del informe de los análisis y datos pertinentes a la alineación optimizada. Esta información también estará disponible en el sitio "internet" del Distrito de Jacksonville del Cuerpo de Ingenieros del Ejército de los Estados Unidos: www.saj.usace.army.mil (seleccione "MWD And C111"). Se aceptarán comentarios hasta el final del período de comentarios, el cual finalizará el día 30 de Mayo de 2000. Para mayor información puede comunicarse con la Sra. Bárbara Cintrón (español) al número de teléfono 904-232-1692 o con el Señor Elmar Kürzbach (inglés) al número de teléfono 904-232-2325.

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ADDENDUM A

DRAFT GENERAL REEVALUATION REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

8.5 SQUARE MILE AREA

A1.0 DESCRIPTION OF ALTERNATIVE VARIATIONS

A1.1 Alternative No. 6C – Modified Western Portion of 8.5 SMA as Buffer Plan (SOR Boundary)

Alternative No. 6C is similar in nature and design to Alternative No. 6B. This alternative consists of an exterior and interior levee as well as a seepage canal generally constructed as shown on the attached Figure A1. The location of the levee and canal system generally follows the eastern boundary of the area designated by SFWMD as the Phase 1 - Save Our Rivers boundary. This area has been the subject of willing seller property acquisition by SFWMD as part of the Save our Rivers program.

A seepage collection canal will be located between the levees designed to keep the groundwater levels within the eastern portion of the area at the same levels as existed prior to the implementation of the MWD project. The interior levee is positioned to prevent surface water from entering the seepage canal. A new proposed pumping structure (S-357) located at the southern terminus of the levee/canal system will discharge seepage through a 120-inch diameter pipe to be released south into a spreader swale and eventually to the C-111 project area. There will be no major changes to operations of existing structures in the C&SF system.

The canal and levee system on the western boundary of this alternative is located approximately 1.3 miles west of the boundary of Alternative No. 6B. It is located approximately 0.6 miles east of the westernmost boundary of the 8.5 SMA. This alternative includes approximately 7.3 square miles within its boundaries, which is 3.8 square miles more than Alternative No. 6B.

A1.2 Alternative No. 6D – Modified Western Portion of 8.5 SMA as Buffer Plan

Alternative No. 6D is similar in nature and design to Alternative No. 6C. This alternative consists of an exterior and interior levee as well as a seepage canal generally constructed as shown on Figure A2. The location of the exterior levee is generally inside the Phase 1 -

Save Our Rivers boundary line that the outer levee for Alternative No. 6C follows. The seepage canal system runs along 205th Avenue north from 168th Street to 132nd Street, then east along 132nd Street to the L-31N canal. The seepage collection canal is designed to keep the groundwater levels within the area interior of the outer levee at the same levels as existed prior to the implementation of the MWD project. Two Interior levees, one on either side of the seepage canal, are positioned to prevent surface water from entering the seepage canal. A new proposed pumping structure (S-357) located at the southern terminus of the levee/canal system will discharge seepage through a 120-inch diameter pipe to be released south into a spreader swale and eventually to the C-111 project area. There will be no major changes to operations of existing structures in the C&SF system resulting from implementation of this alternative.

The canal and levee system on the western boundary of this alternative ranges from approximately 0.22 to 1.1 miles west of the boundary of Alternative No. 6B, depending on the location along the boundary. Similarly, it is located approximately .10 to 1.05 miles east of the westernmost boundary of the 8.5 SMA. This alternative includes approximately 5.5 square miles within its boundaries, which is 2.1 square miles more than Alternative No. 6B.

A2.0 PROJECT REQUIREMENTS

The performance of Alternatives 6C and 6D was evaluated based on requirements, objectives and performance measures as described in Section 4.0 and Table 5 of the Draft GRR/SEIS. The five Project Requirements were identified as being mandatory for any alternative to be considered viable (described in Section 4.0.) A description of how each requirement was evaluated and the results of the evaluation are included below.

RQ1: Do not negatively impact higher stages in ENP as specified in the Modified Water Deliveries Project.

The performance of Alternative No. 1, Authorized GDM Plan, in conjunction with the other components of the MWD project, established the “goal” for hydrologic restoration in the adjacent ENP lands. Therefore, Alternative Nos. 6C and 6D must accommodate stages at least as high as this goal in order to satisfy this requirement.

Alternative Nos. 6C and 6D have average water depths at least as high as or higher than the authorized plan. In addition, an analysis of indicator cells on Tables A6 and A7 consistently show that Alternative Nos. 6C and 6D have stages equal to or higher than Alternative No. 1.

Therefore, it is concluded that these alternatives meet Requirement No. 1.

RQ2: Mitigate for increased stages within the 8.5 SMA resulting from implementation of the Modified Water Deliveries Project.

All alternatives were designed to provide, at a minimum, for water elevation mitigation for the 8.5 SMA using structural and/or non-structural components. Alternative No. 6C provides mitigation through the proposed structural features, and Alternative No. 6D provides mitigation through the proposed structural features supplemented by flowage easements. The hydrographs presented in Figures A5 through A8 provide additional information on the specific modeling results due solely to the structural elements for each alternative.

RQ3: Develop a solution that can be permitted by regulatory interests under current and reasonably foreseeable regulations (i.e., water quality, wetlands).

The construction associated with Alternative Nos. 6C and 6D may impact existing wetlands located in the 8.5 SMA. However, it is anticipated that the benefit gained by the increased stages in the Everglades system will offset losses to these wetlands.

Water quality was carefully considered for each of the alternatives. Alternatives No. 6C and 6D included interior berms to segregate the runoff from inside the 8.5 SMA so that it would not mix with cleaner seepage water from ENP. For Alternative No. 6D, interior berms would be constructed on both sides of the seepage canal to provide this separation. In addition, Alternative Nos. 6C and 6D discharge to the south through the C-111 Buffer area, which provides water quality improvement prior to discharge to ENP.

There is no anticipated conflict with any known regulations that would affect the permitting of any of the alternatives.

RQ4: Ensure no significant impact to existing habitat of endangered or threatened species.

The USFWS is a cooperating agency with the USACE and has been an active participant in the development and evaluation of all alternatives. The Draft Coordination Act Report (DCAR) from the DOI (through the NPS and USFWS) identified several species of key concern including the Cape Sable Seaside Sparrow, the Wood Stork and the Snail Kite. The DCAR identifies the locations of significant habitats of concern and presents issues and strategies concerning the

preservation and protection of these areas. Alternative Nos. 6C and 6D were designed with structural and non-structural measures such that there would be no impacts to these existing habitats.

At present time, the USFWS has indicated there appears to be no adverse impact to listed species of concern. However, they have acknowledged that the modeling results are inconclusive regarding the potential impact to these critical habitats. Section 106 consultation is ongoing, and will conclude after a plan is selected.

RQ5: Maintain current levels of flood protection for agricultural areas east of L-31 N.

All alternatives were designed to maintain flood protection in adjacent agricultural lands, located outside of the 8.5 SMA and east of L-31 N. The modeling for future conditions included boundary conditions which simulate stages that will occur following completion of MWD, C-111 and CERP, which are higher than that presently existing in the area (See discussion in Appendix A).

There appear to be limited impacts to the agricultural interests east of L-31N and northeast of the 8.5 SMA. However, these impacts appear to be attributable to restoration flows to NESRS and are independent of the 8.5 SMA alternatives. This issue will be dealt with under an Operational EIS for MWD and C-111, which is due for completion by the end of calendar year 2001.

A3.0 RESULTS OF ALTERNATIVES ANALYSIS

Table A2 (i.e., revised Table 8 from Draft GRR/SEIS) presents the computed numeric or assigned qualitative metric for each of the performance measures. The values included in this table are absolute values (i.e., not comparison data) computed by the methodology outlined in Table 7 of the Draft GRR/SEIS.

There is no attempt to sum or process the results of the performance measures for each objective. As such, there is no attempt to make a determination of whether an objective has been "met." This information is provided for comparative purposes to be used at the discretion of the reviewer.

Two comparison tables were prepared for further evaluation of the results of this analysis. Table A3 (i.e., revised Table 9 from Draft GRR/SEIS) contains comparisons of all alternatives to Base 95 conditions (existing conditions). This table contains the relative difference of the performance of each alternative as compared to

current conditions. It demonstrates what would be expected to change if any one of the alternatives was implemented.

Table A4 (i.e., revised Table 10 from Draft GRR/SEIS) compares Alternative Nos. 2B through 9, including 6C and 6D, to Alternative No. 1 (Authorized Plan). This is referred to as the Locally Preferred Alternative comparison as it demonstrates the relative difference of the performance of any one of the potential LPAs (Alternative Nos. 2B through 9) to the authorized plan.

The formats of Tables A3 and A4 are consistent with Tables 9 and 10 in the Draft GRR/SEIS, which provide a description of each of the performance measures. In total, these tables complement each other in presenting the data compiled for all of the alternatives evaluated in this GRR.

A4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE NOS. 6C AND 6D

A4.1 Hydrological Effects of Structural and Operational Alternatives

Model simulations of existing conditions indicate that during the wet season water elevations may at times be above ground surface elevations, especially on the western portion of the 8.5 SMA. Alternative Nos. 6C and 6D allow water levels in the ENP Expansion Area to be raised in an effort to meet MWD design flows. Alternative No. 6C provides flood mitigation for the eastern portion of 8.5 SMA. Alternative No. 6D does not provide mitigation for the entire site inside the levee utilizing the facilities as simulated. However, the area not mitigated for using the structural components (approximately 546 acres) of Alternative No. 6D will be mitigated by the purchase of flowage easements.

Another important hydrological effect of Alternative Nos. 6C and 6D are their beneficial effect on the NESRS area. The hydrologic simulations have identified that Alternative No. 6D provides the same area of inundation as was found in Alternative No. 6B, 30,982 acres. Alternative No. 6C, while providing for substantial inundation and hydroperiods within the NESRS, has 392 acres less inundation. Another positive effect is in the western portion of the 8.5 SMA. Lands with a surface elevation of less than 7.0 feet NGVD receive significant inundation. Thus, it can be expected that ecological benefits will be derived in an area that is allowed to experience periodic flooding. The environmental significance of this change in flow patterns is discussed in subsequent sections of this report.

A4.2 Regional Water Supply

The nearest regional water supply wellfield is the Miami Springs-Hialeah Wellfield, located approximately 11 miles northeast of the 8.5 SMA. Due to the proximity of the wellfield, and the limited area of the 8.5 SMA, neither Alternative Nos. 6C or 6D will impact regional groundwater supplies.

A4.3 Water Quality

Base 95 conditions for the wet year (1995) show groundwater flow predominantly to the southeast across the 8.5 SMA from the ENP. Flow is toward the L-31N canal from the 8.5 SMA, and to the L-31N canal from the east. Potentially degraded shallow groundwater or surface water within the 8.5 SMA would presently flow to the L-31N canal, where it would then flow to the south to the C-111 canal, and/or to the east through the C-102 or C-103 canals. Any constituents migrating deeper within the surficial aquifer would flow beneath the L-31N to the southeast. Water quality impacts to the ENP during the wet year appear minimal for the existing condition.

Alternative Nos. 6C and 6D provide buffer areas west of their respective perimeter levees. In Alternative No. 6C, the levee and seepage canal has a configuration similar to Alternative No. 6B and can be expected to provide similar groundwater flow regimes. Although Alternative No. 6D has the seepage canal separated from the levee, it too provides a similar flow regime. The shallow groundwater/surface water from ENP and the 8.5 SMA would flow toward the new canal, where it will be moved via proposed structure S-357 into a spreader canal south of 168th Street. The water would be discharged as overland flow to the south, to a stormwater treatment area. Any impacted groundwater from the 8.5 SMA would be directed to the STA, where some of the water would flow to the ENP. Residence of the discharged water within the STA should help to reduce the amount of potential contaminants migrating to the ENP. The reduction in size of the developed lands within the 8.5 SMA would further reduce water quality impacts due to decreased input and output of potential contaminants to and from the 8.5 SMA.

A4.4 Upland Vegetation

Inventories of existing conditions in the project area revealed that natural upland resources have largely been converted to agricultural or residential land use, or no longer support native upland species. Therefore, native upland resources are not an issue of concern

A4.5 Wetlands

Alternative No. 6C

Alternative No. 6C incorporates flood mitigation with levee and seepage canal features that protect mostly agricultural/residential lands to the east and preserve mostly wetland to the west of the levee and canal system. Wetlands west of the levee will experience some reduction in hydroperiod due to drawdown and will act as a buffer between the levee and canal system and the ENP. The majority of this land is publicly owned, recently purchased under the Save Our Rivers Program (SOR). The WRAP analysis predicts a total of 11,600 functional units as a result of this alternative. This represents a reduction of 1,805 functional units compared to base 95 conditions. This reduction is due to the direct impacts associated with the levee and canal system and drawdown effects of the canal.

Hydrologic modeling predicts a net gain of 2,050 acres total wetland acres within the 8.5 SMA and the area of potential effect. Short hydroperiod marl forming wetlands are predicted to be reduced by 2,967 acres as a result of increased flows and long hydroperiod peat-forming wetlands are predicted to increase by 917 acres.

Direct impacts to wetlands within the 8.5 SMA involve approximately 260 acres. The majority of these impacts are represented as graminoid wetland < 7.0 ft. elevation (161 acres) and herbaceous wetland - low to moderate disturbance (74 acres).

Alternative No. 6D

Alternative No. 6D is predicted to result in a net reduction of wetland acreage (48 acres) within the 8.5 SMA and the surrounding area of potential affect. Short hydroperiod marl-forming wetland would be reduced by 976 acres while long hydroperiod peat-forming wetlands are predicted to increase by 928 acres. The reduction in short hydroperiod wetlands appears to be the result of drawdown effects near the canal while increases in long hydroperiod wetlands result from the overall improved flows within the NESRS.

Direct impacts to wetlands result from construction of the levee and canal system. A total of 23 acres of wetland will be directly affected. The large difference between this alternative and Alternative No. 6C is a result of the easterly shift of the canal into predominantly upland areas.

The WRAP analysis predicts a total of 14,727 functional units under this plan, representing a 1,322 functional unit increase compared to the base 95 plan.

A4.6 Fish and Wildlife

For lands east of the proposed levee and canal, the effects of Alternative Nos. 6C and 6D are similar and result in reduced habitat quality. For the lands west of the proposed levee, the effects of these alternatives are expected to result in improved habitat for fish and wildlife resources due to improved water deliveries to ENP.

A4.7 Listed Species

Snail Kite. The effects of these alternatives on the Snail kite are similar to those stated for Alternative No. 6B.

Wood Stork. The effects of these alternatives on the Wood stork are similar to those stated for Alternative No. 6B.

Cape Sable Seaside Sparrow. During dry years, the effects of these alternatives on the Cape Sable seaside sparrow (CSSS) are similar to those stated in Alternative No. 6B where the entire breeding season is afforded suitable water levels for nesting. For wet years, sparrows may experience delayed nesting conditions until water levels fall below 0.3 feet (required to initiate nesting). This may not occur until five weeks into the nesting season and provides them with only 35 to 46 days (due to fluctuations in onsite ground elevations) in which the water depth is within tolerance ranges for breeding. It is possible that the CSSS would have a successful nesting season in sub-population F during the wet year scenario. However, this reduction in nesting days is largely due to the artificial storm event incorporated in the model during week 15 (35 days into the expected nesting season), which greatly shortens the nesting season.

A4.8 Socio-Economics

A detailed discussion of the socio-economic impacts associated with Alternative Nos. 6C and 6D is provided in Section A8.0.

Of the 6,413 acres located in the 8.5 SMA, 1,743 acres or about 27 percent of the land will be required to implement Alternative No. 6C. Approximately 611 acres of land are privately owned and will need to be acquired. About 27 acres of this land is agricultural land. Utilizing the average annual agricultural income per acre in Miami-Dade County (\$2,445), the value of annual agricultural income potentially

lost is estimated at about \$66,000. Assuming the existing estimated mix of residents versus non-residents (40.5% vs. 59.5%) remains constant, the estimated amount of annual agricultural income potentially lost to residents is about \$28,000 and the loss to non-residents is about \$38,000.

Currently, only 574 acres of the 8.5 SMA are located above the 10-year flood elevation. With the implementation of Alternative No. 6C, an additional 3,304 acres of land would fall at or above the 10-year flood elevation. Therefore, there would be a total of approximately 3,878 acres of land above the 10-year flood elevation. Assuming the development of all privately-owned vacant and agricultural lands, approximately 2,523 acres of the land above the 10-year flood elevation could potentially be developed for residential uses at a density of one unit per five acres, assuming a variance is obtained from Miami-Dade County. This acreage could accommodate a maximum of 505 new residential units. This capacity is greater than the demand created by the 16 households displaced with the construction of the project and the 174 new households projected for the area.

If the above-projected development were to occur in the area, approximately 156 acres of agricultural lands would be lost to residential development. Utilizing the average annual agricultural income per acre in Miami-Dade County (\$2,445), the value of annual agricultural income potentially lost is estimated at about \$380,000. Assuming the existing estimated mix of residents versus non-residents remains constant, the estimated amount of annual agricultural income potentially lost to residents is about \$150,000 and a loss of \$230,000 to non-residents.

The above analysis assumes that the East Everglades Overlay Zoning Ordinance will be enforced. However, the County has not currently been enforcing the residential density of the 8.5 SMA. The average residential density for the 8.5 SMA area is approximately one unit per four acres rather than the one unit per 40 acres specified by the ordinance. Assuming that Miami-Dade County continues not to enforce the density ordinance, future development of the remaining privately owned area could be developed at an even greater density than allowed for in the zoning ordinance.

With Alternative No. 6D, 2,881 acres (45 percent) of the 6,413 acres located in the 8.5 SMA will be required to implement this alternative. Approximately 1,203 acres of land are privately owned and will need to be acquired in fee simple and 546 acres will need to have flowage easements. Of the total 2,881 acres required for Alternative No. 6D,

1,132 acres have been acquired and are in public ownership. About 215 acres of the land needing to be acquired is agricultural land. Utilizing the average annual agricultural income per acre in Miami-Dade County (\$2,445), the value of annual agricultural income potentially lost is estimated at about \$526,000. Assuming the existing estimated mix of residents versus non-residents (40.5% vs. 59.5%) remains constant, the estimated amount of annual agricultural income potentially lost to residents is about \$221,000 and the loss to non-residents is about \$305,000.

Currently, only 574 acres of the 8.5 SMA are located above the 10-year flood elevation. With the implementation of Alternative No. 6D, an additional 2,192 acres of land would fall at or above the 10-year flood elevation. Therefore, there would be a total of approximately 2,766 acres of land above the 10-year flood elevation. Assuming the development of all privately-owned vacant and agricultural lands, approximately 2,097 acres of the land above the 10-year flood elevation could potentially be developed for residential uses at a density of one unit per five acres with a variance from Miami-Dade County. This acreage could accommodate a maximum of 419 new residential units. This capacity is greater than the demand created by the 35 households displaced with the construction of the project and the 174 new households projected for the area.

If this extent of development were to occur in the area, approximately 618 acres of agricultural lands would be lost to residential development. Utilizing the average annual agricultural income per acre in Dade County (\$2,445), the value of annual agricultural income potentially lost is estimated at about \$1.51 million. Assuming the existing estimated mix of residents versus non-residents remains constant, the estimated amount of annual agricultural income potentially lost to residents is about \$610,000 and a loss of \$900,000 to non-residents.

The above analysis assumes that the zoning ordinance will be enforced. However, the County has not currently been enforcing the residential density of the 8.5 SMA. The average residential density for the 8.5 SMA area is approximately one unit per four acres rather than one unit per 40 acres specified by the ordinance. Assuming that Miami-Dade County continues not to enforce the density ordinance, future development of the remaining privately owned area could be developed at an even greater density than allowed for in the zoning ordinance.

Relocations

Approximately 70 permanent residents (17 households) will be relocated with the implementation of Alternative No. 6C. In addition to the cost to acquire the land, the relocation of these residents will cost an estimated \$28,000 per household or about \$480,000. In addition, the alternative will also displace several agricultural properties (27 acres). This will result in a loss of income (as identified above) to these property owners.

With the implementation of Alternative No. 6D, approximately 144 permanent residents (35 households) will be relocated. In addition to the cost to acquire the land, the relocation of these residents will cost an estimated \$28,000 per household or about \$980,000. In addition, the alternative will also displace several agricultural properties (215 acres). This will result in a loss of income (as identified above) to these property owners.

Due to the large increase in the amount of land above the 10-year flood elevation, opportunities for relocation due to the implementation of both Alternative 6C and 6D will be available within the 8.5 SMA.

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-income populations.

As stated in the Section 3 of the Draft SEIS, the majority of the population residing in the 8.5 SMA is of Hispanic heritage. In addition, although specific income data does not exist, given the rural nature and the reported presence of migrant farm workers and illegal immigrants within the 8.5 SMA, a substantial percent of the residents within the 8.5 SMA could be considered as a low-income population.

Although relocations are involved with the implementation of both Alternative Nos. 6C and 6D, impacts on the minority and low-income populations may be minimized to some extent because housing opportunities may be available in the portion of the 8.5 SMA that is located in the flood free area. In addition, non-residents could potentially be impacted due to the fact that many of them have second homes and weekend houses at which they spend time with their

families, work their farms, and socialize with neighbors. However, these property owners have the potential to purchase second homes and farms in the portion of the 8.5 SMA remaining in private ownership. This should help to preserve some of the unique cultural and social aspects of this area. Therefore, the loss of the community and unique Hispanic culture of the 8.5 SMA will be minimal for both residents and non-residents. Therefore, environmental justice impacts associated with these alternatives will be minimal.

The USACE will work together with these minority and low-income populations to identify potential mitigation for impacts that may result from this action.

In addition, because a substantial amount of minority and low-income populations exist within the 8.5 SMA, additional efforts are being made to ensure that they are informed regarding the proposed project and given an opportunity to comment on the alternatives. Efforts include providing public meeting notices in both English and Spanish; providing interpreters at formal public meetings to translate English to Spanish; providing court reporters to record public comment in both languages; and providing English and Spanish advertising on the radio and television. In addition, the Executive Summary portion of the Supplemental Environmental Impact Statement will be printed in both English and Spanish.

A4.9 Aesthetics

These alternatives will have negligible impacts on aesthetic resources of the 8.5 SMA and environs.

A4.10 Recreational Resources

The proposed levees will facilitate access onto public land for pedestrian and bicycle traffic (and possibly wheelchairs). As a condition to land acquisition using public monies, management of natural resources may require that provisions be made for public access.

A4.11 Air Quality and Noise

There are no anticipated air quality impacts associated with these alternatives.

The U.S. General Services Administration requires that for equipment used on government contracts, the noise levels at the site should not exceed certain limits. Construction activities and their respective

sound level limits at a distance of 50 feet associated with these alternatives include blasting (95 dBA) and earthmoving activities (ranging from 75 to 80 dBA). Operation of the pump station also has its own sound level limits at a distance of 50 feet which is 75dBA. The closest residents to the construction activities and pump station are approximately 100 feet so the sound levels will be attenuated (i.e. reduced) to some degree.

A4.12 Farmlands

Coordination with the NRCS has been initiated to determine the extent of direct and indirect conversion of farmlands under the Farmlands Protection Policy Act of 1981 (7 U.S.C. 4201(c)(1)(A)). The results of that coordination will be presented in the Final SEIS.

A4.13 Hazardous Materials Contamination

The alternatives analysis for hazardous material contamination is covered under water quality for each alternative. Impacts to the ENP from ground and surface water originating from the 8.5 SMA are qualitatively evaluated based on flow and discharge areas for each alternative. This methodology includes all potential sources of water quality degradation.

A4.14 Cultural Resources.

Consultation under Section 106 of the National Historic Preservation Act of 1966 (PL 89-665 as amended) has been initiated. The results of this consultation will be presented in the Final SEIS

A5.0 HYDRAULIC AND HYDROGEOLOGIC MODELING

A5.1 Alternative Layout and Limited Optimization

Alternative No. 6 is a modification of the original GDM design that has been evaluated. The levee was aligned along the middle of the 8.5 SMA, a seepage canal was placed inside the levee alignment and a pump station S-357 was located at the southwestern terminus of the seepage canal. This plan would protect a portion of the residents of the 8.5 SMA while also providing buyout of lower elevation lands in the southwestern corner of 8.5 SMA.

Alternative No. 6 was originally tested with S-357 pumping at 225 CFS and had the water discharging just south of Richmond Drive. Contour maps and hydrographs revealed an apparent “backwater” mounding effect which caused additional flooding impacts within the southwestern portion of the 8.5 SMA. Therefore, Alternative No. 6A

was re-formulated which added a long discharge pipe from S-357 to the C-111 project area. This change did remove the backwater effect, however, flood mitigation within the 8.5 SMA needed to be improved. Subsequent runs looked at larger pump stations including an Alternative No. 6B which evaluated pumping rates for S-357 at 500 CFS.

At the request of the SFWMD, additional refinements of Alternative No. 6 were evaluated. Alternative No. 6C provides for a levee and seepage canal to be placed along the Florida “Save Our Rivers” right-of-way. Alternative No. 6D provides for a levee location and a seepage canal between the alignments plotted for Alternative No. 6B and Alternative No. 6C. One difference noted in Alternative No. 6D is the placement of the seepage canal far to the east of the levee alignment. The location of the seepage canal for 6D was hypothesized as a means to minimize ecological impacts on NESRS. Both Alternative Nos. 6C and 6D were evaluated with pumping rates for S-357 at 500 CFS. Time constraints did not allow for multiple model simulations to evaluate other pump configurations.

The size of pump station S-356 was also reduced for this evaluation as compared to the GDM. The maximum pumping rate at S-356 was set at 500 CFS. This seemed to be adequate for all alternatives including Alternative No. 6. It is possible that once the “whole” Modified Water Delivery project features are evaluated as one unit, the ultimate size of S-356 may be higher than 500 CFS. For the purposes of this study, the size of S-356 was adopted as 500 CFS for all alternatives. In summary, Alternative No. 6 was “tweaked” several times to minimize potential relocation of residents while maximizing ecological benefits to NESRS.

A5.2 Alternative No. 6 – Performance Measurements

Since no attempt was made to rank any project alternative, performance measure data will be presented for each alternative in turn and shall be presented to allow easy review and comparison. It will be the responsibility of the project sponsor to weigh all of the data and select a locally preferred alternative. Since, Alternative Nos. 6C and 6D were simply optimizations of Alternative No. 6, all model output will not be presented in this addendum. The addendum will detail the most important model output with respect to the various performance measures. The final GRR/SEIS will present all of the information developed similar to what was presented in Appendix A.

Tables of data were prepared which summarize water stages at all key model indicator cells. These tables present weekly average water stages along with key yearly statistics. Tables A6 and A7 show the

water stages at all key model indicator cells for Alternative Nos. 6C and 6D.

Hydrographs that compare all of the alternatives against Alternative No. 1 and both base conditions were also prepared and will be shown in the final GRR/SEIS.

Tables and charts were prepared for select model indicator cells that show five week “moving” average water stages for the annual maximum and minimum along with when these occur. These were prepared for the 1995 precipitation year and the 1989 precipitation year. These tables and charts were prepared and will be available for the final GRR/SEIS.

Tables were prepared summarizing change in average yearly water storage (above ground surface) within the NESRS for both base conditions and all of the alternatives for a 1995 precipitation year and a 1989 precipitation year. These are presented as tables A8 and A9.

Contour maps were prepared for each plan that show water stages at week 26 (peak stage) for the 1995 precipitation year. These were then “draped” over the topography at the 8.5 SMA to determine peak inundation. Inundation maps and mitigation maps were prepared for each project alternative. Figures A5 to A8 present the results of these for Alternative Nos. 6C and No. 6D. These maps were prepared for the 1995 precipitation year.

Wetland type maps and total hydroperiod maps were prepared for each project alternative along with summary tables and charts. Figure A9 presents an example of one of these maps showing the results for Alternative No. 6D. Table A10 presents summarized results for all of the plans related to key model indicator cells similar to Tables A6 and A7. Table A11 shows spatial extent of increased or decreased hydropatterns within NESRS.

A6.0 PRELIMINARY ENGINEERING AND COSTS

A6.1 Alternative No. 6C – Modified Western Portion of 8.5 SMA as Buffer Plan (SOR Boundary)

Alternative No. 6C was developed based on a request from the SFWMD following the public presentation of this report on April 12, 2000 and is similar in nature and design to Alternative No. 6B. This alternative, shown in Figure A3, consists of an exterior and interior levee as well as a seepage canal generally constructed as shown on the attached figure. The location of the levee and canal system

generally follows the eastern boundary of the area designated by SFWMD as the Phase 1 - Save Our Rivers boundary. This area has been the subject of willing seller property acquisition by SFWMD as part of the Save Our Rivers program.

A seepage collection canal will be located between the levees designed to keep the groundwater levels within the eastern portion of the area at the same levels as existed prior to the implementation of the MWD project. The interior levee is positioned to prevent surface water from entering the seepage canal. The canal dimensions are provided on Table A12. A new proposed pumping structure (S-357) located at the southern terminus of the levee/canal system will discharge seepage through a 120-inch diameter pipe to be released south into a spreader swale and eventually to the C-111 project area. There will be no major changes to operations of existing structures in the C&SF system.

The canal and levee system on the western boundary of this alternative is located approximately 1.3 miles west of the boundary of Alternative No. 6B. It is located approximately 0.6 miles east of the westernmost boundary of the 8.5 SMA. This alternative includes approximately 7.3 square miles within its boundaries, which is 3.8 square miles more than Alternative No. 6B.

Real Estate requirements for the project consist of those properties necessary for the construction of the levee and canal system as well as those located between the levee system and the ENP. This includes the fee simple acquisition of 1,743 acres. The direct cost of this purchase as well as any administrative and relocation cost is provided in Table A15.

Operations and maintenance of this canal and levee system will be similar to that proposed for Alternative No. 6B. Operations and Maintenance considers that required for all of the structural components of the alternative. These costs have been estimated at \$334,557 per year.

The construction plan for Alternative No. 6C is equivalent to that presented in the discussion of Alternative No. 6B. This plan provides a discussion of the construction sequencing for the levees, canal, and pumping structures. A final construction plan will be developed for this plan if it is selected as the preferred alternative.

Alternative No. 6C also calls for the creation of open space within the Phase 1 Save Our Rivers boundary. The creation of open space occurs because of the periodic inundation of the area that will result

from the increase of surface water elevations within the ENP. Thus, those private lands generally to the west of the perimeter levee would become public lands under this alternative. Disposition of properties acquired under this alternative would be similar to that specified for Alternative No. 6B. That is, structure removal and ancillary facility removal, clearing, exotics removal and land management is all contemplated. The cost for clearing and grubbing, structure removal and grading are provided in Table A13. Costs associated with management of the area following this clearing are specified as Ecological O & M costs and total \$55,423 per year (annualized).

The preliminary cost summary sheet for Alternative No. 6C is presented in Table A13. The cost estimate for Alternative No. 6C is \$61,425,639. These costs include: capital, replacement (pumps and roadways) and the O&M costs. The total annual cost of this alternative is \$5,222,993 per year for the 50 year life of the project.

Alternative No. 6C is designed to provide flood mitigation for the area east of the levee. Simulation results show that this alternative fully provides this mitigation. Water levels within the ENP are raised significantly and localized impacts of drawdown in the seepage canal are reduced when compared to Alternative Nos. 1,2, and 9.

A6.2 Alternative No. 6D – Modified Western Portion of 8.5 SMA as Buffer Plan

Alternative No. 6D is similar in nature and design to Alternative No. 6C. This alternative consists of an exterior and interior levee as well as a seepage canal generally constructed as shown on Figure A4. The location of the exterior levee is between that specified for Alternative No. 6B and Alternative No. 6C. Unlike either 6C or 6B, the seepage canal is located well inside the perimeter levee. The canal system runs along 205th Avenue north from 168th Street to 132nd Street, then east along 132nd Street to the L-31N canal. The seepage collection canal will be constructed to maintain groundwater levels within the levee-bordered area at the same levels as existed prior to the implementation of the MWD project. The canal dimensions are provided in Table A12. Two Interior levees, one on either side of the seepage canal, are positioned to prevent surface water from entering the seepage canal. A new proposed pumping structure (S-357) located at the southern terminus of the levee/canal system will discharge seepage through a 120-inch diameter pipe to be released south into a spreader swale and eventually to the C-111 project area. There will be no major changes to operations of existing structures in the C&SF system.

This alternative includes approximately 6.84 square miles within its boundaries, which is 3.38 square miles more than Alternative No. 6B. The perimeter levee is approximately 34,541 feet in length with a design similar to Alternative No. 6B. The seepage canal and interior levees cover a length of 20,773 feet.

Real Estate requirements for the project consist of those properties necessary for the construction of the levee and canal system as well as those located between the levee system and the ENP. This includes the fee simple acquisition of 2,335 acres. The direct cost of this purchase as well as any administrative and relocation cost is provided in Table A16.

Operations and maintenance of this canal and levee system will be similar to that proposed for Alternative No. 6C. Operations and maintenance considers that cost required for all of the structural components of the alternative. These costs have been estimated and total \$334,557 per year.

The construction plan for Alternative No. 6D is equivalent to that presented in the discussion of Alternative No. 6B. This plan provides a discussion of the construction sequencing for the levees, canal, and pumping structures. A final construction plan will be developed for this plan if it is selected as the preferred alternative.

Alternative No. 6D also calls for the creation of open space within the Phase 1 Save Our Rivers boundary. The creation of open space occurs because of the periodic inundation of the area that will result from the increase of surface water elevations within the ENP. Thus, those private lands generally to the west of the perimeter levee would become public lands under this alternative. Disposition of properties acquired under this alternative would be similar to that specified for Alternative Nos. 6B and 6C. That is, structure removal and ancillary facility removal, clearing, exotics removal and land management is all contemplated. The costs for clearing and grubbing, structure removal and grading are provided in Table A14. Costs associated with management of the area following this clearing are specified as Ecological O & M costs and are estimated as \$78,550 per year.

The preliminary cost summary sheet for Alternative No. 6D is presented in Table A14. The cost estimate for Alternative No. 6D is \$96,260,454. These costs include: capital, replacement (pumps and roadways) and the O&M costs. This results in a total annual cost of \$7,903,573 per year over the 50 year life of the project.

Alternative No. 6D is designed to provide flood mitigation for the area east of the levee. Simulation results show that this alternative fully provides this mitigation. Water levels within the ENP are raised significantly and localized impacts of drawdown in the seepage canal are reduced when compared to Alternative Nos. 1,2, and 9.

A7.0 REAL ESTATE

A7.1 Alternative No. 6C – Modified Western Portion of 8.5 SMA as Buffer Plan (SOR Boundary)

Relocation Assistance (Public Law 91-646)

There was one residential relocation associated with the USACE lands at a cost of \$25,000. The remaining lands required for this Alternative will mandate 37 residential moves at an estimated cost of \$674,900. These costs consist of move costs and replacement housing payment for 16 owner occupants (\$529,901) and move costs for 21 non-owner occupied homes (\$145,000). An estimated 11 of the 16 Replacement Housing Payments will be last resort. There are twenty tenant relocations at an estimated \$205,000 for move costs and rent differential. There is one business relocations estimated at \$20,000 for move costs and reestablishment expenses. Additional P.L. 91-646 costs for Alternative No. 6 have been estimated at \$1,504,900.

Acquisition/Administrative Costs

The administrative costs of the USACE are \$1,700,000. SFWMD would acquire a total of 375 parcels, which includes those already acquired by SFWMD. Of these 375 parcels, 40 would be acquired through eminent domain. Total administrative costs of the SFWMD are therefore estimated as follows: (335 tracts X \$6,000) = \$2,010,000 and (40 X \$30,000) = \$1,200,000. Total administrative costs are therefore estimated at \$1,700,000 for the USACE and \$3,210,000 for the SFWMD.

The total estimated real estate cost of Alternative No. 6C is \$29,275,723 as shown in Table A15 and summarized below.

USACE

Lands and Damages	\$2,378,200
Acquisition/Administrative costs	<u>\$1,700,000</u>
SUBTOTAL	\$4,078,200

NON-FEDERAL SPONSOR

Lands and Damages	
SFWMD acquired land-fee simple	\$9,342,510
Fee lands to be acquired	
611 at \$9,690	\$5,920,590
Residential Improvements	
23X\$87,000	\$2,001,000
Misc. Improvements	\$ 47,520
Severance damages	\$0
Minerals	\$0
Raising of septic systems	\$0
Acquisition/Administrative costs	
Includes condemnation	\$3,210,000
P.L. 91-646 Payments	\$ 924,000
Administrative costs for relocations	\$ 580,000
Contingency 25% on \$12,684,010	<u>\$ 3,171,003</u>
SUBTOTAL	\$25,975,523

TOTAL ESTIMATED REAL ESTATE COST OF
ALTERNATIVE NO. 6C= \$29,275,723

A7.2 Alternative No. 6D – Modified Western Portion of 8.5 SMA as Buffer Plan**Relocation Assistance (Public Law 91-646)**

There was one residential relocation associated with the USACE lands at a cost of \$25,000. The remaining lands required for this Alternative will result in 87 residential moves estimated at \$1,524,156. The costs for these moves consists of both move costs and replacement housing payment for 35 owner occupants (\$1,159,156) and move costs for 52 non-owner occupied homes (\$365,000). An estimated 23 of the 35 Replacement Housing Payments will be last resort. There will be 20 tenant relocations at \$205,000 for move costs and rent differential. 1 business relocation estimated at \$20,000 for move costs and reestablishment expenses. Additional P.L. 91-646 costs for Alternative No. 6D have been estimated at \$3,334,156.

Acquisition/Administrative Costs

The administrative costs of the USACE are \$1,700,000. SFWMD would acquire a total of 762 parcels, which includes those already acquired by SFWMD. Of these 762 parcels, 60 would be acquired through eminent domain. Total administrative costs of the SFWMD are therefore estimated as follows: (702 tracts X \$6,000) = \$4,212,000 and (60 X \$30,000) = \$1,800,000. Total administrative costs are

therefore estimated at \$1,700,000 for the USACE and \$6,012,000 for the SFWMD.

The total estimated real estate cost of Alternative No. 6D is \$62,494,593 as shown in Table A16 and summarized below.

USACE

Lands and Damages	\$2,378,200
Acquisition/Administrative costs	<u>\$1,700,000</u>
SUBTOTAL	\$4,078,200

NON-FEDERAL SPONSOR

Lands and Damages	
SFWMD acquired land-fee simple	\$9,342,510
Fee lands to be acquired	
1749 at \$9,690	\$16,947,810
Flowage easement lands to be acquired	
546 at \$9,190	\$5,017,740
Residential Improvements	
87 X \$87,000	\$7,569,000
Misc. Improvements	\$ 378,400
Severance damages	\$0
Minerals	\$0
Raising of septic systems	\$480,000
Acquisition/Administrative costs	
Includes condemnation	\$6,012,000
P.L. 91-646 Payments	\$1,774,156
Administrative costs for relocations	\$1,080,000
Contingency 25% on \$39,259,106	<u>\$ 9,814,777</u>
SUBTOTAL	\$58,416,395

TOTAL ESTIMATED REAL ESTATE COST OF ALTERNATIVE NO. 6D=	\$62,494,593
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A8.0 SOCIAL IMPACT ASSESSMENT – ALTERNATIVE NOS. 6B, 6C, AND 6D

A8.1 General.

The information contained in this section of the addendum is somewhat different than that previously published. The analysis presented reflects the latest data available on land use and residential units impacted by the various alternatives and is provided in order for decision makers to have the best available information in their deliberation process. The analyses presented are based on the DERM database. DERM's database reflects ongoing property

acquisitions within the 8.5 SMA and is slightly less than that used in the original analysis. This analysis is based on a total of 514 residential units that is 14 units more than presently exist in the data base due to ongoing acquisitions.

A8.2 Alternative No. 6B – Socio-economic Impacts – No Density Constraints (Current Practice).

Of the 6,413 acres located in the 8.5 SMA, 4,346 acres or about 68 percent of the land will be required to implement this alternative. Of the 4,346 acres required about 1,132 acres or 26 percent are presently in public ownership. Of the 4,346 acres required to implement this alternative 4,196 would be acquired in fee simple with flowage easements acquired on the remaining 150 acres. It is estimated that about 529 permanent residents in 129 households will be displaced with the implementation of this alternative. In addition, about 1,136 acres of agricultural lands and its' annual income producing potential will be acquired. The relocation of 129 households is estimated to cost \$28,000 per household or about \$3.6 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$2.8 million. Of the \$2.8 million, permanent residents would lose an estimated \$1.1 million in annual income with non-residents losing the remaining \$1.7 million. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to The U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report" all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. With the implementation of this alternative, an additional 1,643 acres of land will be protected from the 1 in 10 year flood event. Of the total 2,217 acres, about 1,711 acres would be available for future residential development. Within these 1,711 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade County. However, the county has not enforced residential density of the whole 8.5 SMA to the point where the average size parcel of land for a residence is less than 4 acres rather than the 40 acres specified in the ordinance. Assuming that Dade County will not enforce the density ordinance, there would be sufficient vacant or

agricultural lands to accommodate the displaced 129 households discussed above and also the 15 year projected increase in households, presently estimated at 174 additional households. As stated earlier, under the current practice of not enforcing the density ordinance residential units presently occupy about 3.65 acres per residential unit. Using this density the 1,711 acres would have the capacity to accommodate 469 new households that is in excess of the projected demand of 303 (129 +174) households discussed above.

About 1,106 acres (303 x 3.65) are needed to accommodate the 303 new residences needed over the projection period. Of the 1,106 acres, 205 acres of vacant land would be available for development. The remaining 901 acres would be agricultural lands. These lands would be converted to residential use under this scenario. There are no specific data on crop yields and value in the 8.5 SMA. Therefore, the county average annual income per acre for agricultural activities was used to approximate the real value of agricultural production. This is considered appropriate since all alternatives will be evaluated in the same manner and the order of magnitude of agricultural impacts between the various alternatives can be measured. As stated earlier, the average income per acre in Dade County is \$2,445. Therefore, the value of annual agricultural income lost from implementing this alternative is estimated at about \$2.2 million. Of this amount, about \$0.9 million is the estimated annual income lost to residents of the area with the remaining \$1.3 million being lost to non-residents. Again, the loss of this income to property owners within the 8.5 SMA is in addition to that discussed above and could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to the U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report" all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

A8.3 Alternative No. 6B – Socio-economic Impacts – Density Ordinances Enforced.

Of the 6,413 acres located in the 8.5 SMA, 4,346 acres or about 68 percent of the land will be required to implement this alternative. Of the 4,346 acres required about 1,132 acres or 26 percent are presently in public ownership. Of the 4,346 acres, 4196 will be acquired in fee simple while flowage easements will be required on the remaining 150 acres. It is estimated that about 529 permanent

residents in 129 households will be displaced with the implementation of this alternative. In addition, about 1,136 acres of agricultural lands and its' annual income producing potential will be acquired. The relocation of 129 households is estimated to cost \$28,000 per household or about \$3.6 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$2.8 million. Of the \$2.8 million, permanent residents would lose an estimated \$1.1 million in annual income with non-residents losing the remaining \$1.7 million. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to the U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report" all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. With the implementation of this alternative, an additional 1,643 acres of land will be protected from the 1 in 10 year flood event. Of the total 2,217 acres, about 1,711 acres would be available for future residential development. Within these 1,711 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade County. This acreage could accommodate a maximum of 342 new residential units. This capacity is slightly greater than the demand created by the 129 households displaced with the construction of the project and the 174 new households projected. About 1,515 acres are needed to accommodate the 303 residences needed over the projection period under this scenario. Of the 1,515 acres needed, 205 acres of vacant land would be available for development. The remaining 1,310 acres would be agricultural lands. These lands would be converted to residential use under this scenario. There are no specific data on crop yields and value in the 8.5 SMA. Therefore, the county average annual income per acre for agricultural activities was used to approximate the real value of agricultural production. This is considered appropriate since all alternatives will be evaluated in the same manner and the order of magnitude of agricultural impacts between the various alternatives can be measured. As stated earlier, the average income per acre in Dade County is \$2,445. Therefore, the value of annual agricultural income lost from implementing this alternative is estimated at about \$3.2 million. Of this amount, about \$1.3 million is the estimated

annual income lost to residents of the area with the remaining \$1.9 million being lost to non-residents. Again, the loss of this income to property owners within the 8.5 SMA is in addition to that discussed above and could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to the U. S. Department of Labor, Bureau of Labor Statistics data as presented in the “Restudy Report” all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors’ income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices. See Figure 8, Table 8 and Table 12 for additional details.

A8.4 Alternative No. 6C – Socio-economic Impacts – No Density Constraints (Current Practice).

Of the 6,413 acres located in the 8.5 SMA, 1,743 acres or about 27 percent of the land will be required to implement this alternative. Of the 1,743 acres required about 1,132 acres or 65 percent are presently in public ownership. It is estimated that about 70 permanent residents in 17 households will be displaced with the implementation of this alternative. In addition, about 27 acres of agricultural lands and its’ annual income producing potential will be acquired. The relocation of 17 households is estimated to cost \$28,000 per household or about \$0.48 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$66,000. Of the \$66,000, permanent residents would lose an estimated \$28,000 in annual income with non-residents losing the remaining \$38,000. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to The U. S. Department of Labor, Bureau of Labor Statistics data as presented in the “Restudy Report” all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors’ income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. Of the total acres about 534 acres would be available for future residential development. Within these 534 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade

County. However, the county has not enforced residential density of the whole 8.5 SMA to the point where the average size parcel of land for a residence is less than 4 acres rather than the 40 acres specified in the ordinance. Assuming that Dade County will not enforce the density ordinance, there would be sufficient vacant or agricultural lands to accommodate the displaced 17 households discussed above and also the 15 year projected increase in households, presently estimated at 174 additional households. As stated earlier, under the current practice of not enforcing the density ordinance, residential units presently occupy about 3.65 acres per residential unit. Under this scenario about 1,184 acres of vacant land would be available to accommodate this growth. Using the 3.65 density, the 1,184 acres would have the capacity to accommodate 324 new households that is in excess of the projected demand of 191 (17 +174) households discussed above. About 697 acres (191 x 3.65) are needed to accommodate the 191 new residences needed over the projection period. The 697 acres needed could be accommodated by the 1,184 acres of vacant land available for development.

A8.5 Alternative No. 6C – Socio-economic Impacts – Density Ordinances Enforced.

Of the 6,413 acres located in the 8.5 SMA, 1,743 acres or about 27 percent of the land will be required to implement this alternative. Of the 1,743 acres required about 1,132 acres or 65 percent are presently in public ownership. It is estimated that about 70 permanent residents in 17 households will be displaced with the implementation of this alternative. In addition, about 27 acres of agricultural lands and its' annual income producing potential will be acquired. The relocation of 17 households is estimated to cost \$28,000 per household or about \$0.48 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$66,000. Of the \$66,000, permanent residents would lose an estimated \$28,000 in annual income with non-residents losing the remaining \$38,000. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to The U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report" all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. Of the total acres about 534 acres would be available for future residential development. Within these 534 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade County. This acreage could accommodate a maximum of 107 new residential units. This capacity is less than the demand created by the 17 households displaced with the construction of the project and the 174 new households projected. About 955 acres are needed to accommodate the 191 residences needed over the projection period under this scenario. Of the 534 acres available, 35 acres of vacant land would be available for development. The remaining 499 acres would be agricultural lands. These lands would be converted to residential use under this scenario. There are no specific data on crop yields and value in the 8.5 SMA. Therefore, the county average annual income per acre for agricultural activities was used to approximate the real value of agricultural production. This is considered appropriate since all alternatives will be evaluated in the same manner and the order of magnitude of agricultural impacts between the various alternatives can be measured. As stated earlier, the average income per acre in Dade County is \$2,445. Therefore, the value of annual agricultural income lost from implementing this alternative is estimated at about \$1.22 million. Of this amount, about \$0.49 million is the estimated annual income lost to residents of the area with the remaining \$0.73 million being lost to non-residents. Again, the loss of this income to property owners within the 8.5 SMA is in addition to that discussed above and could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to the U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report", all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices. See Figure A1 and Table 12 for additional details.

A8.6 Alternative No. 6D – Socio-economic Impacts – No Density Constraints (Current Practice).

Of the 6,413 acres located in the 8.5 SMA, 2,881 acres or about 45 percent of the land will be required to implement this alternative. Of the 2,881 acres required about 1,132 acres or 39 percent are presently in public ownership. Of the 2,881 acres, 2,335 will be acquired in fee simple and flowage easements will be acquired on the remaining 546 acres. It is estimated that about 144 permanent

residents in 35 households will be displaced with the implementation of this alternative. In addition, about 215 acres of agricultural lands and its' annual income producing potential will be acquired. The relocation of 35 households is estimated to cost \$28,000 per household or about \$0.98 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$526,000. Of the \$526,000, permanent residents would lose an estimated \$221,000 in annual income with non-residents losing the remaining \$305,000. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to The U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report", all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. Of the total acres about 534 acres would be available for future residential development. Within these 534 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade County. However, the county has not enforced residential density of the whole 8.5 SMA to the point where the average size parcel of land for a residence is less than 4 acres rather than the 40 acres specified in the ordinance. Assuming that Dade County will not enforce the density ordinance, there would be sufficient vacant or agricultural lands to accommodate the displaced 35 households discussed above and also the 15 year projected increase in households, presently estimated at 174 additional households. As stated earlier, under the current practice of not enforcing the density ordinance, residential units presently occupy about 3.65 acres per residential unit. Under this scenario about 3,278 acres of land would be available and could accommodate a maximum of 898 residential units which is greater than the projected demand of 209 (35 +174) households discussed above. About 763 acres (209 x 3.65) are needed to accommodate the 209 new residences needed over the projection period. The 3,278 acres available consists of 851 acres of vacant land and 2,427 acres of agricultural land. The available vacant lands can accommodate the projected demand discussed above with no impact on agricultural lands.

A8.7 Alternative No. 6D – Socio-economic Impacts – Density Ordinances Enforced.

Of the 6,413 acres located in the 8.5 SMA, 2,881 acres or about 45 percent of the land will be required to implement this alternative. Of the 2,881 acres required about 1,132 acres or 39 percent are presently in public ownership. Of the 2,881 acres, 2,335 will be acquired in fee simple and flowage easements will be acquired on the remaining 546 acres. It is estimated that about 144 permanent residents in 35 households will be displaced with the implementation of this alternative. In addition, about 215 acres of agricultural lands and its' annual income producing potential will be acquired. The relocation of 35 households is estimated to cost \$28,000 per household or about \$0.98 million. Further, it is estimated that the annual agricultural income lost to both residents and non-residents would be about \$526,000. Of the \$526,000, permanent residents would lose an estimated \$221,000 in annual income with non-residents losing the remaining \$305,000. The loss of this income to property owners within the 8.5 SMA could result in the increased demand for public assistance from the county, state and Federal governments. However, these losses would be relatively short lived. According to The U. S. Department of Labor, Bureau of Labor Statistics data as presented in the "Restudy Report", all displaced farm laborers would be reemployed within one year of losing their job. The loss of proprietors' income however, is expected to take longer but should recover within 3 years. Further, lost production could be made up elsewhere within the county or by applying more intense farming practices.

Of the 6,413 acres of land located in the 8.5 SMA, about 574 acres are located above the 10-year flood line, an elevation of 7.7 feet. Of the total acres about 534 acres would be available for future residential development. Within these 534 acres, a residential density of 1 unit per 5 acres would be allowed with a variance from Dade County. However, the county has not enforced residential density of the whole 8.5 SMA to the point where the average size parcel of land for a residence is less than 4 acres rather than the 40 acres specified in the ordinance. Assuming that Dade County will enforce the density ordinance, there would be insufficient vacant or agricultural lands to accommodate the displaced 35 households discussed above and also the 15 year projected increase in households, presently estimated at 174 additional households. Using a density of 1 unit per 5 acres, the 534 acres would have the capacity to accommodate 107 new households that is in less of the projected demand of 209 (35 +174) households discussed above. About 1,045 acres (209 x 5.0) are needed to accommodate the 209 new residences needed over the

projection period. The 534 acres available consists of 35 acres of vacant land plus 499 acres of agricultural land. Total annual agricultural income losses from this acreage would amount to \$1.22 million. Of this amount, permanent residents would lose an estimated \$0.49 million in annual income with non-residents losing the remaining \$0.73 million. See Figure A2 and Table 12 for additional details.

A9.0 LOCAL COST ANALYSIS

Both Alternative Nos. 6C and 6D are designed as flood mitigation alternatives. Therefore, local costs were not analyzed for either of these alternatives.

A10.0 CONCLUSION

Alternative Nos. 6C and 6D have been presented in this document in a format consistent with the GRR/SEIS. These alternatives will be evaluated in conjunction with the original nine alternatives. Comments will be received until the end of the comment period, which is May 30, 2000. The final document is estimated to be completed and released for public review on June 30, 2000.

**CENTRAL AND SOUTHERN FLORIDA PROJECT
MODIFIED WATER DELIVERIES TO
EVERGLADES NATIONAL PARK, FLORIDA**

8.5 SQUARE MILE AREA

ADDENDUM A

TO THE

**DRAFT GENERAL REEVALUATION REPORT AND
DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT**

TABLES

**DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA**

May 2000



**Table A1
Features of Alternatives**

Feature	Alt No. 1	Alt No. 2B	Alt No. 3	Alt No. 4	Alt No. 5	Alt No. 6B	Alt No. 6C	Alt No. 6D	Alt No. 7	Alt No. 8A	Alt No. 9
Name	Authorized GDM	Modified GDM	Deep Seepage Barrier	Landowner's Choice Acquisition	Total Buy-Out	Western Area as Buffer	Western Area as Buffer (SCR Boundary)	Western Area as Buffer	Raise All Roads	Western Area as Flow-Way	Adaptive Refinement of GDM
DDR Figure No.	Figure 4 (GRR)	Figure 5 (GRR)	Figure 6 (GRR)	Figure 7 (GRR)	Figure 8 (GRR)	Figure 9 (GRR)	Figure A1	Figure A2	Figure 10 (GRR)	Figure 11 (GRR)	Figure 12 (GRR)
Level of flood protection/mitigation	Mitigation	Mitigation	Protection	Mitigation	Mitigation	Protection	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation
Mitigation/protection method	Levees, seepage canal, pumps	Levees, seepage canal, pumps	Levee and Seepage barrier	Land acquisition	Land acquisition	Levees, seepage canal, pump	Levees, seepage canal, pump	Levees, seepage canal, pump	Raise roads	Levees, seepage canal,	Levees, seepage canal, pumps
Approx. amount of 8.5 SMA mitigated/protected by structural measures	100%	100%	100%	0%	0%	35%	73%	64%	0%	50%	100%
Canal-levee system	Major Levee, seepage canal, minor levee	Major Levee, seepage canal, minor levee	Levee	None	None	Major Levee, seepage canal, minor levee	Major Levee, seepage canal, minor levee	Major Levee, seepage canal, minor levee	None	Major Levee, minor levee	Major Levee, seepage canal, minor levee
Length of new canals/levees	39,000 ft	39,000 ft	39,000 ft	n/a	n/a	23,000 ft	35,000	21,000 ft	n/a	23,000 ft	39,000 ft
Amount of land acquisition needed	5%	5%	5%	TBD	100%	65%	27%	36%	0%	50%	5%
Seepage water management	Pump to L-31N	Pump to C-111 Buffer Area	Barrier - not needed	n/a	n/a	Pumped to C-111 Buffer Area	Pumped to C-111 Buffer Area	Pumped to C-111 Buffer Area	n/a	Pumped to C-111 Buffer Area	Pump to L-31N; Pump to C-111 Buffer Area
Seepage water treatment method	Discharge to L-31N	Overland Flow to C-111 Buffer Area	n/a	n/a	n/a	Overland Flow to C-111 Buffer Area	Overland Flow to C-111 Buffer Area	Overland Flow to C-111 Buffer Area	n/a	Overland Flow to C-111 Buffer Area	Discharge to L-31N; C-111 Buffer Area
Number of new structures	2	2	0	0	0	1	1	1	0	1	2; 1
Preliminary Cost Estimate (\$Million)	\$30.6	\$33.9	\$241	\$132	\$179	\$144	\$61.4	\$96.2	\$136	\$142	\$39.9

Table A2
Results of Alternatives Analysis - Revised

1. Evaluate effects on hydropatterns in NESRS.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Hydroperiod Impacts ⁽¹⁾	Increased Hydroperiod (ac)	N/A	30,207	29,799	30,982	30,982	30,982	30,982	30,590	30,982	30,982	30,982	30,003
	Decreased Hydroperiod (ac)	N/A	775	1,183	0	0	0	0	392	0	0	0	979
b. Water depths ⁽¹⁾	Increased depth (ac)	N/A	59,427	59,694	62,396	62,125	62,125	62,068	60,643	62,068	62,125	62,029	59,560
	Decreased depth (ac)	N/A	2,538	2,271	0	0	0	0	1,322	0	0	95	2,405
c. Effects on Seasonal variability	Minimum stage, (ft)	5.68	6.61	6.69	6.95	8.25	8.25	6.86	6.97	6.84	8.25	6.91	6.65
	Maximum stage, (ft)	7.92	8.05	8.07	8.34	8.25	8.25	8.29	8.17	8.25	8.25	8.31	8.06
	Range of stage, (ft)	2.68	2.02	1.95	1.96	1.95	1.95	1.97	1.97	1.96	1.95	1.94	1.98
d. Duration of continuous flooding	Consecutive weeks of inundation	39	39	42	42	42	42	45	43	45	42	45	41
⁽¹⁾ Value represents the comparison of each alternative versus the Base 95 Condition													

Table A2 (Continued)
Results of Alternatives Analysis - Revised

2. Evaluate impacts to the landowners and residents of the 8.5 SMA resulting from implementation of the Modified Water Deliveries Project.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Flood mitigation damages	Area of damages, (ac, %)	0	0	0	4693 73%	N/A	N/A	0	0	546 9%	4404 69%	2013 31%	0
b. Flood protection damages	Area of damages, (ac, %)	0	N/A	N/A	5825 90%	N/A	N/A	150 2%	N/A	N/A	N/A	N/A	N/A
c. Impacts to business	No. of businesses impacted	0	0 0%	0 0%	0 0%	4 100%	4 100%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
d. Residents Relocated	No. of permanent residences relocated	0	1 0.5%	1 0.5%	1 0.5%	17 8%	208 100%	129 62%	17 8%	35 17%	1 0.5%	104 50%	1 0.5%
	Total no. of residential structures impacted	0	1	1	1	41	514	319	41	87	1	258	1
e. Lost agricultural lands	Lost area (ac)	0	0 0%	0 0%	0 0%	0 0%	2,642 100%	1,175 44%	27 1%	215 8%	0 0%	900 34%	0 0%
	Lost annual income (\$M)	0	0	0	0	0	6.46	2.78	0.07	0.53	0	2.20	0
f. Unwilling sellers	No. of property owners	0	0 0%	0 0%	0 0%	80 100%	80 100%	59 74%	10 13%	19 24%	0 0%	52 65%	0 0%

Table A2 (Continued)
Results of Alternatives Analysis - Revised

3. Analyze Cost Effectiveness													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Project costs	O&M and Replacement Costs (\$M)	0	.27	.33	0	0	0	.33	.33	.33	.43	.33	.37
	Real Estate Costs (\$M)	0	4.1	4.1	110	123	165	113	29	62	112	115	4.1
	Capital Costs (\$M)	0	27	30	131	9.2	14	31	32	34	24	27	36
	Total Initial Project Costs (\$M)	0	31	34	241	132	179	144	61	96	136	142	40
b. Local Costs	Capital Cost (\$M)	0	0	0	0	0	0	36	0	0	0	0	0
	Annual O&M Costs (\$M)	0	0	0	0	0	0	0.90	0	0	0	0	0
1) Capital cost includes all design and construction management costs and contingency; it does not include real estate costs. 2) O & M and Replacement costs are presented as annual costs. 3) O&M costs do not include ecological O&M or water quality monitoring. 4) Real estate costs include all fee simple acquisition and flowage easements.													

Table A2 (Continued)
Results of Alternatives Analysis - Revised

4. Analyze Effects to Ecological Functions													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Total Wetlands	Area (ac)	64,881	62,343	62,012	63,694	66,285	66,285	65,104	62,831	64,833	66,285	65,285	62,179
b. Short-Hydroperiod Marl Forming Wetlands	Area (ac)	5,971	1,690	1,249	1,070	2,399	2,399	2,074	3,004	2,055	2,399	1,908	1,470
Long-Hydroperiod Peat Forming wetlands	Area (ac)	58,910	60,653	60,763	62,624	63,886	63,886	63,030	59,827	62,778	63,886	63,377	60,709
c. WRAP Score	Functional Units	13,405	10,640	10,640	11,630	15,853	15,853	15,011	11,600	14,727	14,695	15,645	10,640

Table A2 (Continued)
Results of Alternatives Analysis - Revised

5. Evaluate effects on conditions favorable to Federal and State Listed Endangered Species survival													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Cape Sable Seaside Sparrow		Through the Draft Coordination Act Report, the USFWS has stated that impacts to the sparrow are not anticipated. Upon recommendation from the USFWS, a full assessment will be conducted to determine effects on the Cape Sable Seaside Sparrow following selection of a preferred alternative.											

6. Measure compatibility with CERP and C-111 projects without adversely impacting the current level of flood protection east of L-31N													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Compatibility with CERP	Qualitative (R/Y/G)	N/A	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
b. Compatibility with C-111	Qualitative (R/Y/G)	N/A	Red	Green	Yellow	Yellow	Yellow	Green	Green	Green	Yellow	Green	Green
c. Agricultural lands east of L-31N	Stage (ft)	6.35	6.72	6.57	6.67	6.69	6.69	6.58	6.52	6.62	6.69	6.67	6.65

Table A2 (Continued)
Results of Alternatives Analysis - Revised

7. Analyze impacts and costs associated with time delays in implementation of alternatives													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Environmental and cultural resources		See Table 7 in GRR for discussion of this measure											
b. Ability to meet implementation schedule	Qualitative (R/Y/G)	N/A	Green	Green	Yellow	Red	Red	Red	Red	Red	Red	Red	Green
c. Construction delays	Qualitative (R/Y/G)	N/A	Green	Green	Red	N/A	N/A	Green	Green	Green	Green	Yellow	Green
d. Administrative requirements of alternatives	Qualitative (R/Y/G)	N/A	Green	Green	Yellow	Red	Red	Red	Red	Red	Red	Red	Green

**Table A3
Base 95 Comparison - Revised**

1. Evaluate effects on hydropatterns in NESRS.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Hydroperiod Impacts ⁽¹⁾	Increased Hydroperiod (ac)		30,207	29,799	30,982	30,982	30,982	30,982	30,590	30,982	30,982	30,982	30,003
	Decreased Hydroperiod (ac)		775	1,183	0	0	0	0	392	0	0	0	979
b. Water depths ⁽¹⁾	Increased depth (ac)		59,427	59,694	62,396	62,125	62,125	62,068	60,643	62,068	62,125	62,029	59,560
	Decreased depth (ac)		2,538	2,271	0	0	0	0	1,322	0	0	95	2,405
c. Effects on Seasonal variability	Minimum stage, (ft)		0.93	1.01	1.27	2.57	2.57	1.18	1.29	1.16	2.57	1.23	0.97
	Maximum stage, (ft)		0.13	0.15	0.42	0.33	0.33	0.37	0.25	0.33	0.33	0.39	0.14
	Range of stage, (ft)		-0.66	-0.73	-0.72	-0.73	-0.73	-0.71	-0.71	-0.72	-0.73	-0.74	-0.70
d. Duration of continuous flooding	Consecutive weeks of inundation		0	3	3	3	3	6	4	-6	3	6	2
⁽¹⁾ Value represents the comparison of each alternative versus the Base 95 Condition													

Table A3 (Continued)
Base 95 Comparison - Revised

2. Evaluate impacts to the landowners and residents of the 8.5 SMA resulting from implementation of the Modified Water Deliveries Project.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Flood mitigation damages	Area of damages, (ac, %)		0	0	4693 73%	N/A	N/A	0 0%	0 0%	546 9%	4404 69%	2013 31%	0
b. Flood protection damages	Area of damages, (ac, %)		N/A	N/A	5825 90%	N/A	N/A	150 2%	N/A	N/A	N/A	N/A	N/A
c. Impacts to business	No. of businesses impacted		0 0%	0 0%	0 0%	4 100%	4 100%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
d. Residents Relocated	No. of permanent residences relocated		1 0.5%	1 0.5%	1 0.5%	17 8%	208 100%	129 62	17 8%	35 17	1 0.5%	104 50	1 0.5%
	Total no. of residential structures impacted		1	1	1	41	514	319	41	87	1	258	1
e. Lost agricultural lands	Lost area (ac)		0 0%	0 0%	0 0%	0 0%	2642 100%	1175 44%	27 1%	215 8%	0 0%	900 34%	0 0%
	Lost annual income (\$M)		0 0%	0 0%	0 0%	0 0%	6.46 100%	2.78 43%	0.07 1%	0.53 8%	0 0%	2.30 36%	0 0%
f. Unwilling sellers	No. of property owners		0 0%	0 0%	0 0%	80 100%	80 100%	59 74%	10 13%	19 24%	0 0%	52 65%	0 0%

Table A3 (Continued)
Base 95 Comparison - Revised

3. Analyze Cost Effectiveness													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Project costs	O&M and Replacement Costs (\$M)		.27	.33	0	0	0	.33	.33	.33	.43	.33	.37
	Real Estate Costs (\$M)		4.1	4.1	110	123	165	113	29	62	112	115	4.1
	Capital Costs (\$M)		27	30	131	9.2	14	31	32	34	24	27	36
	Total Initial Project Costs (\$M)		31	34	241	132	179	144	61	96	136	142	40
b. Local Costs	Capital Cost (\$M)		0	0	0	0	0	36	0	0	0	0	0
	Annual O&M Costs (\$M)		0	0	0	0	0	0.90	0	0	0	0	0
1) Capital cost includes all design and construction management costs and contingency; it does not include real estate costs. 2) O & M and Replacement costs are presented as annual costs. 3) O&M costs do not include ecological O&M or water quality monitoring. 4) Real estate costs include all fee simple acquisition and flowage easements.													

Table A3 (Continued)
Base 95 Comparison - Revised

4. Analyze Effects to Ecological Functions													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Total Wetlands	Area (ac)		-2,538	-2,869	-1,187	1,404	1,404	223	-2,050	-48	1,404	404	-2,702
b. Short-Hydroperiod Marl Forming Wetlands	Area (ac)		-4,281	-4,722	-4,901	-3,572	-3,572	-3,897	-2,967	-3,916	-3,572	-4,063	-4,501
Long-Hydroperiod Peat Forming wetlands	Area (ac)		1,743	1,853	3,714	4,976	4,976	4,120	917	3,868	4,976	4,467	1,799
c. WRAP Score	Functional Units		-2,765	-2,765	-1,775	2,448	2,448	1,606	-1,805	1,322	1,290	2,240	-2,765

Table A3 (Continued)
Base 95 Comparison - Revised

5. Evaluate effects on conditions favorable to Federal and State Listed Endangered Species survival													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Cape Sable Seaside Sparrow		Through the Draft Coordination Act Report, the USFWS has stated that impacts to the sparrow are not anticipated. Upon recommendation from the USFWS, a full assessment will be conducted to determine effects on the Cape Sable Seaside Sparrow following selection of a preferred alternative.											

6. Measure compatibility with CERP and C-111 projects without adversely impacting the current level of flood protection east of L-31N													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Compatibility with CERP	Qualitative (R/Y/G)		Better	Better	Better	Better	Better	Better	Better	Better	Better	Better	Better
b. Compatibility with C-111	Qualitative (R/Y/G)		Worse	Better	Same	Same	Same	Better	Better	Better	Same	Better	Better
c. Agricultural lands east of L-31N	Stage (ft)		0.37	0.22	0.32	0.34	0.34	0.23	0.17	0.27	0.34	0.32	0.30

Table A3 (Continued)
Base 95 Comparison - Revised

7. Analyze impacts and costs associated with time delays in implementation of alternatives													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Environmental and cultural resources		Not Applicable for this Comparison											
b. Ability to meet implementation schedule													
c. Construction delays													
d. Administrative requirements of alternatives													

Table A4
Locally Preferred Alternative Comparison - Revised

1. Evaluate effects on hydropatterns in NESRS.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Hydroperiod Impacts	Increased Hydroperiod (ac)			-408	775	775	775	775	383	775	775	775	-204
	Decreased Hydroperiod (ac)			408	-775	-775	-775	-775	-383	-775	-775	-775	204
b. Water depths	Increased depth (ac)			276	2,969	2,698	2,698	2,641	1,216	2,641	2,698	2,602	133
	Decreased depth (ac)			-276	-2,538	-2,538	-2,538	-2,538	-1,216	-2,538	-2,538	-2,443	-133
c. Effects on Seasonal variability	Minimum stage, (ft)			0.08	0.34	1.64	1.64	0.25	.36	.23	1.64	0.30	0.04
	Maximum stage, (ft)			0.02	0.29	0.20	0.20	0.24	0.12	0.20	0.20	0.26	0.01
	Range of stage, (ft)			-0.07	-0.06	-0.07	-0.07	-0.05	-.05	-.06	-0.07	-0.08	-0.04
d. Duration of continuous flooding	Consecutive weeks of inundation			3	3	3	3	6	4	6	3	6	2

Table A4 (Continued)
Locally Preferred Alternative Comparison - Revised

2. Evaluate impacts to the landowners and residents of the 8.5 SMA resulting from implementation of the Modified Water Deliveries Project.													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Flood mitigation damages	Area of damages, (ac, %)			0	4693 73%	N/A	N/A	150 2%	0	546 9%	4404 69%	2013 31%	0
b. Flood protection damages	Area of damages, (ac, %)			N/A	5825 90%	N/A	N/A	319 5%	N/A	N/A	N/A	N/A	N/A
c. Impacts to business	No. of businesses impacted			0 0%	0 0%	4 100%	4 100%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
d. Residents Relocated	No. of permanent residences relocated			0	0	16	207	128	16	34	0	103	0
	Total no. of residential structures impacted			0	0	40	513	318	40	86	0	257	0
e. Lost agricultural lands	Lost area (ac)			0 0%	0 0%	0 0%	2642 100%	1175 44%	27 1%	215 8%	0 0%	900 34%	0 0%
	Lost annual income (\$M)			0 0%	0 0%	0 0%	6.46 100%	2.78 43%	0.07 1%	0.53 8%	0 0%	2.30 36%	0 0%
f. Unwilling sellers	No. of property owners			0 0%	0 0%	80 100%	80 100%	59 74%	10 13%	19 24%	0 0%	52 65%	0 0%

Table A4 (Continued)
Locally Preferred Alternative Comparison - Revised

3. Analyze Cost Effectiveness													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Project costs	O&M and Replacement Costs (\$M)			0.06	-0.27	-0.27	-0.27	0.06	.06	.06	0.16	0.06	0.10
	Real Estate Costs (\$M)			0	106	119	161	109	25	58	108	111	0
	Capital Costs (\$M)			3	104	-18	-13	4	5	7	-3	0	9
	Total Initial Project Costs (\$M)			3	210	101	148	113	30	65	105	111	9
b. Local Costs	Capital Cost (\$M)			0	0	0	0	36	0	0	0	0	0
	Annual O&M Costs (\$M)			0	0	0	0	0.90	0	0	0	0	0
1) Capital cost includes all design and construction management costs and contingency; it does not include real estate costs. 2) O & M and Replacement costs are presented as annual costs. 3) O&M costs do not include ecological O&M or water quality monitoring. 4) Real estate costs include all fee simple acquisition and flowage easements.													

Table A4 (Continued)
Locally Preferred Alternative Comparison - Revised

4. Analyze Effects to Ecological Functions													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Total Wetlands	Area (ac)			-331	1,351	3,942	3,942	2,788	488	2,490	3,942	2,942	-164
b. Short-Hydroperiod Marl Forming Wetlands	Area (ac)			-441	-620	709	709	384	1,314	365	709	218	-220
Long-Hydroperiod Peat Forming wetlands	Area (ac)			110	1,971	3,233	3,233	2,404	-826	2,125	3,233	2,724	56
c. WRAP Score	Functional Units			0	990	5,213	5,213	4,371	960	4,087	4,055	5,005	0

Table A4 (Continued)
Locally Preferred Alternative Comparison - Revised

5. Evaluate effects on conditions favorable to Federal and State Listed Endangered Species survival													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Cape Sable Seaside Sparrow		Through the Draft Coordination Act Report, the USFWS has stated that impacts to the sparrow are not anticipated. Upon recommendation from the USFWS, a full assessment will be conducted to determine effects on the Cape Sable Seaside Sparrow following selection of a preferred alternative.											

6. Measure compatibility with CERP and C-111 projects without adversely impacting the current level of flood protection east of L-31N													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Compatibility with CERP	Qualitative (R/Y/G)			Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
b. Compatibility with C-111	Qualitative (R/Y/G)			Better	Same	Same	Same	Better	Better	Better	Same	Better	Better
c. Agricultural lands east of L-31N	Stage (ft)			-0.15	-0.05	-0.03	-0.03	-0.14	-.20	-0.1	-0.03	-0.05	-0.07

Table A4 (Continued)
Locally Preferred Alternative Comparison - Revised

7. Analyze impacts and costs associated with time delays in implementation of alternatives													
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
a. Environmental and cultural resources	Qualitative (R/Y/G)	See text for discussion of this measure											
b. Ability to meet implementation schedule	Qualitative (R/Y/G)			Same	Worse	Worse	Worse	Worse	Worse	Worse	Worse	Worse	Same
c. Construction delays	Qualitative (R/Y/G)			Same	Worse	N/A	N/A	Same	Same	Same	Same	Worse	Same
d. Administrative requirements of alternatives	Qualitative (R/Y/G)			Same	Worse	Worse	Worse	Worse	Worse	Worse	Worse	Worse	Same

Table A5
Potential Federal Funding Based on Current Authorities

Estimated Project Costs												
Category	Units (\$M)	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
Project Costs	O&M/Replacement	.27	.33	0	0	0	.33	.33	.33	.43	.33	.37
	Real Estate Cost	4	4	93	123	165	115	29	62	110	127	4
	Capital Cost	26	30	131	9	14	31	32	34	24	27	36
	Total Initial Cost	31	34	225	132	179	146	61	96	135	154	40
1) O & M and Replacement costs are presented as annual costs. 2) O&M costs do not include ecological O&M or water quality monitoring. 3) Real estate costs include all fee simple acquisition and flowage easements. 4) Capital cost includes all design and construction management costs and contingency; it does not include real estate costs.												

Potential Federal Funding												
Category	Units (\$M)	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 6C	Alt 6D	Alt 7	Alt 8A	Alt 9
Potential Federal Funding	O&M/Replacement	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
	Real Estate Cost	4	2	55	62	83	57	15	31	56	58	2
	Capital Cost	27	30	31	9	14	31	31	31	24	27	31
	Total Initial Cost	31	32	86	71	97	88	46	62	80	85	33
Assumptions: 1. Alternative 1 is the current authorized federal plan and DOI funds 100% of project costs and COE funds 75% of O&M costs 2. Up to \$31 million of present capital and Real estate costs from Alternative 1 are available for capital costs for Alternatives 2B-9 3. Up to 50% of real estate costs can be made available through supplemental DOI funding 4. Up to \$0.20 million of present O&M costs from Alternative 1 are available from COE for Alternatives 2B-9 5. If total costs change, federal funding could change 6. If the federally preferred project changes, federal funding changes 7. If DOI or USACE authority changes, federal funding could change Notes: 1. All figures represent the upper limit of present DOI or USACE authority, given the assumptions stated above, and are not representative of an actual DOI or USACE funding decision or appropriations 2. Approximately \$50 million in Land and Water Conservation Fund (LWCF) grant funds are appropriated and available 3. Approximately \$12 Million in MWD funding and \$47 million in LWCF grant funding are included in the FY 2001 DOI budget request currently under consideration by Congress												

Table A6
Weekly Average Water Stages at Key Indicator Cells for Alternative 6C

Model Layer	Cell	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	
OnAoc	interC_05_06gms	7.76	7.76	7.77	7.71	7.67	7.68	7.69	7.66	7.67	7.68	7.68	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	
2	205737	8.39	8.39	8.35	8.2	8.15	8.15	8.12	8.11	8.09	8.08	8.08	8.08	8.02	8.08	8.08	8.03	8.07	8.08	8.03	8.02	8.01	8.01	8.01	8.01	8.01	8.01	8.01	8.01	8.01	8.01	
3	205743	5.88	5.88	5.85	5.69	5.65	5.65	5.67	5.69	5.67	5.7	5.69	5.67	5.64	5.68	5.63	5.69	5.73	5.82	5.89	5.84	5.85	5.82	5.87	5.85	5.85	5.85	5.85	5.85	5.85	5.85	
4	205746	7.67	7.67	7.66	7.67	7.65	7.65	7.62	7.56	7.52	7.59	7.56	7.34	7.17	7.08	7.04	6.99	6.87	6.83	7.82	6.96	6.82	7.36	7.59	7.68	7.59	8.1	8.18	8.26	8.18	8.06	7.99
5	205803	7.93	7.98	7.98	7.96	7.92	7.9	7.94	7.9	7.95	7.73	7.71	7.63	7.58	7.49	7.44	7.32	7.27	7.37	7.31	7.22	7.73	8.36	8.36	8.27	8.53	8.88	8.71	8.8	8.96	8.49	
6	212777	7.17	7.11	7.06	6.9	6.94	6.71	6.6	6.57	6.5	6.54	6.54	6.44	6.37	6.39	6.33	6.34	6.33	6.71	6.46	6.32	7.29	7.86	7.86	7.71	7.97	8.29	8.12	7.96	7.86	7.75	
7	216326	7.62	7.76	7.73	7.64	7.60	7.51	7.41	7.36	7.29	7.26	7.27	7.2	7.13	7.08	7.04	6.82	6.85	7.89	7.12	7.81	7.62	8.14	8.31	8.27	8.52	8.86	8.74	8.61	8.51	8.42	
8	212699	7.76	7.71	7.67	7.6	7.64	7.48	7.4	7.34	7.28	7.26	7.26	7.18	7.11	7.06	7.01	6.9	6.86	7.87	7.06	6.94	7.46	8.01	8.18	8.16	8.44	8.76	8.63	8.5	8.47	8.33	
9	21881	7.86	7.8	7.76	7.68	7.59	7.51	7.39	7.33	7.27	7.25	7.27	7.21	7.14	7.08	7.05	6.89	6.91	7.14	7.2	7.85	7.6	8.29	8.42	8.36	8.59	8.94	8.83	8.68	8.57	8.46	
10	21871	7.59	7.56	7.54	7.46	7.42	7.37	7.29	7.23	7.17	7.14	7.13	7.06	6.98	6.93	6.88	6.77	6.71	6.87	6.86	6.76	7.29	7.76	7.93	7.97	8.27	8.59	8.44	8.34	8.27	8.12	
11	222386	7.66	7.61	7.48	7.41	7.38	7.27	7.17	7.1	7.04	7.07	7.01	6.96	6.87	6.81	6.76	6.64	6.67	6.81	6.84	6.71	7.23	7.76	7.92	7.99	8.2	8.51	8.39	8.27	8.18	8.11	
12	229295	7.1	7.09	7.06	6.98	6.92	6.84	6.74	6.67	6.59	6.55	6.57	6.48	6.38	6.28	6.13	5.87	5.88	6.28	6.17	5.96	6.75	7.34	7.37	7.65	7.96	7.79	7.68	7.58	7.42	7.36	
13	23231	7.15	7.16	7.14	7.05	6.94	6.83	6.71	6.64	6.56	6.55	6.5	6.48	6.37	6.28	6.23	6	6.03	6.47	6.39	6.17	6.92	7.34	7.35	7.25	7.43	7.77	7.59	7.45	7.36	7.26	
14	23287	7.14	7.16	7.16	7.02	6.91	6.80	6.69	6.62	6.59	6.59	6.52	6.42	6.4	6.32	6.26	6.13	6.16	6.42	6.32	6.12	6.96	7.39	7.39	7.19	7.59	7.96	7.62	7.39	7.27	7.21	
15	23477	6.39	6.39	6.17	6.02	5.99	5.97	5.93	5.84	5.83	5.87	5.84	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	
16	23836	6.75	6.81	6.8	6.62	6.55	6.47	6.39	6.36	6.3	6.28	6.46	6.28	6.1	6.07	6.05	5.88	5.98	6.48	6.34	5.93	7.29	7.42	7.11	6.84	7.54	7.72	7.03	6.87	6.86	6.87	
17	21817	6.6	6.66	6.64	6.46	6.4	6.32	6.28	6.23	6.16	6.22	6.31	6.12	5.98	5.96	5.93	5.74	5.9	6.42	6.32	5.84	7.26	7.39	7.06	6.73	7.46	7.67	6.98	6.79	6.75	6.76	
18	23826	6.2	6.23	6.21	6.02	5.99	5.96	5.9	5.81	5.86	5.82	5.84	5.83	5.76	5.77	5.72	5.69	5.82	6.19	6.19	6.71	6.87	7.2	6.73	6.37	7.07	7.49	6.78	6.44	6.34	6.38	
19	21495	6.2	6.25	6.21	6.03	5.99	5.93	5.86	5.87	5.8	5.86	5.8	5.77	5.67	5.69	5.64	5.48	5.7	6.17	5.86	5.84	6.86	7.25	6.87	6.45	7.13	7.51	6.81	6.45	6.49	6.48	
20	21887	6.17	6.14	6.11	5.96	5.93	5.92	5.89	5.89	5.89	5.89	5.89	5.89	5.81	5.81	5.78	5.71	5.86	5.87	5.83	5.77	6.85	6.86	6.52	6.23	6.94	7.26	6.53	6.17	6.45	6.42	
21	23486	7.34	7.36	7.29	7.15	7.11	7.07	7.02	6.97	6.93	6.9	6.89	6.78	6.68	6.69	6.6	6.34	6.42	6.67	6.41	6.42	7.67	7.43	7.43	7.34	7.67	8.02	7.19	7.63	7.62	7.46	
22	21894	6.96	6.91	6.86	6.7	6.62	6.56	6.48	6.46	6.39	6.4	6.38	6.31	6.25	6.24	6.17	6.09	6.23	6.43	6.22	6.13	6.99	7.41	7.42	7.32	7.64	8.03	7.62	7.63	7.5	7.42	
23	13761	7.22	7.25	7.22	7.09	6.97	6.87	6.78	6.7	6.66	6.62	6.74	6.6	6.42	6.37	6.23	5.98	5.82	6.42	6.54	6.13	6.81	7.37	7.37	7.24	7.64	7.86	7.55	7.29	7.32	7.28	
24	13766	6.71	6.69	6.61	6.46	6.3	6.28	6.22	6.17	6.13	6.02	6.06	6.03	5.91	5.8	5.63	5.48	5.14	5.26	5.86	5.71	6.26	7.06	7.21	7.16	7.47	7.61	7.66	7.36	7.06	6.97	
25	20811	7.16	7.19	7.17	7.06	6.99	6.92	6.7	6.63	6.59	6.54	6.48	6.42	6.3	6.1	6.06	5.82	5.8	6.33	6.37	6.04	6.81	7.36	7.4	7.32	7.64	7.91	7.6	7.39	7.31	7.26	
26	20836	6.51	6.52	6.44	6.19	6.15	6.11	6.0	5.43	5.36	5.32	5.41	5.25	5.01	4.89	4.88	4.68	4.89	5.46	5.45	5.89	6.96	7.31	7.29	7.12	7.51	7.89	7.54	7.15	6.96	6.91	
27	20380	7.08	7.12	7.11	6.93	6.82	6.73	6.64	6.61	6.56	6.58	6.72	6.5	6.33	6.26	6.25	6.06	6.11	6.62	6.95	6.1	6.84	7.23	7.21	7.1	7.47	7.86	7.24	7.13	7.12	7.12	
28	22296	6.61	6.76	6.71	6.56	6.47	6.39	6.33	6.27	6.26	6.28	6.48	6.31	6.17	6.11	6.04	5.84	5.89	6.67	6.47	6.06	6.36	6.27	6.13	6.19	6.86	6.38	6.96	6.87	6.88	6.78	
29	22931	6.6	6.7	6.71	6.49	6.45	6.39	6.27	6.17	6.09	6.14	6.27	6.07	5.87	5.85	5.85	5.64	5.79	6.52	6.32	5.85	7.5	7.19	7.43	6.92	7.79	8.13	7.12	6.84	6.97	6.79	
30	20836	6.64	6.62	6.65	6.73	6.66	6.4	6.39	6.37	6.24	6.28	6.4	6.24	6.22	6.08	5.94	5.91	5.46	6.19	5.89	6.4	7.35	6.17	7.4	6.55	7.6	8.33	6.77	6.29	6.22	6.14	
31	21271	7.69	7.64	7.5	7.4	7.39	7.26	7.16	7.09	7.03	7.07	7.03	6.94	6.86	6.82	6.76	6.67	6.71	7.81	6.84	6.71	7.42	6.89	6.18	6.06	6.3	6.63	6.49	6.36	6.24	6.16	
32	21791	7.64	7.61	7.59	7.52	7.48	7.43	7.36	7.3	7.24	7.21	7.2	7.13	7.08	7	6.96	6.84	6.79	6.92	6.84	6.86	7.96	7.82	7.99	8.02	8.32	8.63	8.49	8.39	8.32	8.26	
33	20880	7.99	8.04	8.05	8.04	7.99	7.97	7.94	7.87	7.83	7.8	7.78	7.7	7.62	7.55	7.48	7.38	7.32	7.42	7.36	7.27	7.77	8.2	8.35	8.25	8.56	8.89	8.74	8.62	8.59	8.52	
34	19890	6.62	6.72	6.75	6.7	6.67	6.64	6.6	6.51	6.47	6.45	6.37	6.27	6.17	6.08	6.01	5.89	5.79	7.82	7.76	7.66	8.16	8.59	8.66	8.6	8.89	9.21	8.04	8.91	8.67	8.6	
35	20376	7.47	7.48	7.48	7.4	7.36	7.32	7.26	7.23	7.19	7.16	7.14	7.07	6.99	6.93	6.87	6.73	6.88	6.91	6.81	6.88	7.34	7.64	7.88	7.87	7.89	8.29	8.03	7.86	7.77	7.7	
36	24677	6.09	6.05	5.99	5.94	5.85	5.77	5.75	5.72	5.68	5.5	5.51	5.21	4.9	4.72	4.67	4.33	4.17	4.54	4.76	4.83	5.6	6.35	6.41	6.47	6.75	7.04	6.85	6.74	6.65	6.59	
37	24687	5.6	5.62	5.47	5.32	5.25	5.09	5.06	4.94	4.79	4.9	4.9	4.69	4.49	4.41	4.42	4.18	4.12	4.59	4.82	4.99	5.71	6.17	6.14	6.13	6.35	6.63	6.41	6.28	6.24	6.26	
38	19157	9.82	9.96	9.91	9.89	9.73	9.66	9.68	9.38	9.32	9.26	9.17	9.03	8.82	8.84	8.74	8.66	8.41	8.37	8.3	8.22	8.89	9.89	9.89	9.83	10.08	10.37	9.22	9.13	9.13	9.11	
39	19153	8.87	8.72	8.69	8.61	8.54	8.47	8.37	8.3	8.25	8.18	8.17	8.07	7.96	7.85	7.77	7.69	7.63	7.96	7.81	8	8.37	9.36	9.32	9.64	9.9	9.69	9.55	9.46	9.41	9.4	
40	20367	6.07	6.11	6.11	6.07	6.03	6.04	5.96	5.94	5.87	5.83	5.81	5.72	5.64	5.57	5.51	5.4	5.33	5.43	5.36	5.26	5.76	6.2	6.27	6.23	6.54	6.87	6.72	6.59	6.53	6.46	
41	20326	7.6	7.62	7.61	7.43	7.36	7.28	7.24	7.19	7.16	7.11	7.12	7.06	6.96	6.87	6.79	6.66	6.6	6.8	6.77	6.63	7.17	7.69	7.63	7.66	7.91	8.23	7.98	7.77	7.67	7.61	
42	20390	6.76	6.86	6.89	6.86	6.82	6.78																									

Table A6 (Continued)
Weekly Average Water Stages at Key Indicator Cells for Alternative 6C

Model Layer	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Week 48	Week 49	Week 50	Week 51	Week 52	Minimum	Mean	Median	Maximum	Stan Dev	Range	
013000_just6C_85_85ops	3	0.21	0.19	0.08	0.05	0.11	0.05	0.05	0.01	7.97	8	8.03	8.20	8.4	0.32	0.27	0.16	0.05	7.96	7.89	7.81	7.74	7.66											3.00	7.75	7.92	8.57	0.771	5.57
	3	0.76	0.72	0.6	0.08	0.05	0.07	0.6	0.03	8.98	8.91	8.97	8.9	0.86	0.81	0.72	0.61	0.53	8.47	8.35	8.26	8.2												3.00	8.36	8.51	7.48	0.992	4.48
	3	0.81	0.91	0.04	0.05	0.02	0.00	0.0	0.0	5.84	5.94	5.05	5.08	0.35	0.23	0.95	0.87	0.8	5.79	5.07	5.05	5.73	5.69	5.68									3.00	5.83	5.85	6.03	0.473	3.02	
	3	0.88	0.08	7.93	7.92	7.97	7.91	7.92	7.91	7.94	7.95	8.11	8.23	8.15	8.1	7.98	7.97	7.78	7.71	7.63	7.95	7.48											3.00	7.96	7.76	8.44	0.702	5.44	
	3	0.61	0.57	0.43	0.38	0.42	0.39	0.41	0.33	0.28	0.32	0.36	0.72	0.65	0.62	0.5	0.38	0.28	0.19	0.11	0.02	7.95											3.00	0.62	0.59	0.06	0.027	0.06	
	3	7.95	7.98	7.98	7.7	7.91	7.73	7.77	7.95	7.97	7.94	0.95	7.91	7.8	7.98	7.52	7.54	7.19	7.03	6.92	6.18												3.00	7.19	7.34	8.29	0.648	5.29	
	3	0.51	0.51	0.36	0.35	0.4	0.35	0.36	0.35	0.3	0.21	0.23	0.49	0.66	0.47	0.34	0.19	0.06	7.92	7.81	7.72	7.62											3.00	7.82	0.85	0.06	0.001	0.66	
	3	0.42	0.41	0.27	0.23	0.25	0.27	0.18	0.12	0.12	0.11	0.39	0.53	0.45	0.36	0.25	0.12	0	7.99	7.79	7.69	7.65											3.00	7.76	0.85	0.75	0.053	5.75	
	3	0.64	0.67	0.4	0.36	0.47	0.42	0.46	0.34	0.24	0.27	0.26	0.74	0.42	0.63	0.58	0.23	0.06	7.92	7.61	7.71	7.61											3.00	7.66	0.86	0.94	0.003	0.94	
	3	0.31	0.28	0.14	0.1	0.15	0.12	0.15	0.05	0	8	7.99	0.26	0.39	0.31	0.24	0.11	7.98	7.67	7.79	7.69	7.6	7.52											3.00	7.62	7.76	8.58	0.036	5.98
	3	0.2	0.19	0.04	0	0.07	0.04	0.06	7.96	7.93	7.91	7.95	0.95	0.93	0.92	0.94	0.91	7.98	7.77	7.67	7.66	7.6	7.41											3.00	7.64	7.76	8.61	0.004	6.61
	3	7.64	7.63	7.48	7.46	7.52	7.5	7.54	7.45	7.42	7.41	7.41	7.65	7.59	7.48	7.34	7.27	7.21	7.14	7.07	6.99												3.00	7.62	7.23	7.95	0.704	4.95	
	3	7.88	7.88	7.24	7.26	7.3	7.36	7.31	7.32	7.32	7.32	7.32	7.43	7.37	7.46	7.33	7.23	7.19	7.16	7.11	7.06	6.93											3.00	6.94	7.19	7.77	0.697	4.77	
	3	7.32	7.34	7.21	7.29	7.44	7.37	7.39	7.3	7.28	7.29	7.32	7.62	7.55	7.57	7.46	7.34	7.24	7.16	7.08	6.94	6.79	6.63										3.00	6.96	7.16	7.95	0.713	4.95	
	3	6.29	6.18	6.15	6.36	6.36	6.32	6.23	6.17	6.28	6.18	6.22	6.63	6.63	6.28	6.2	6.14	6.12	6.16	6.12	6.09	6.03	5.9										3.00	6.09	6.16	7.08	0.908	4.08	
	3	7.83	6.95	6.03	7.1	7.11	7.01	7.01	6.9	6.96	6.96	7	7.52	7.34	7.81	6.93	6.95	6.78	6.72	6.63	6.49	6.4	6.32											3.00	6.67	6.81	7.72	0.668	4.72
	3	6.84	6.84	6.7	6.99	6.99	6.99	6.99	6.76	6.93	6.92	6.98	7.45	7.24	6.95	6.8	6.7	6.63	6.57	6.49	6.36	6.28	6.2										3.00	6.95	6.95	7.67	0.994	4.67	
	3	6.88	6.84	6.28	6.61	6.5	6.41	6.44	6.3	6.41	6.35	6.38	7.00	6.95	6.44	6.35	6.23	6.17	6.18	6.13	6.02	5.95	5.91										3.00	6.21	6.23	7.48	0.613	4.49	
	3	6.95	6.95	6.39	6.95	6.91	6.91	6.95	6.39	6.48	6.43	6.45	7.13	6.95	6.95	6.47	6.33	6.22	6.19	6.12	6.02	5.95	5.9										3.00	6.34	6.23	7.51	0.648	4.51	
	3	6.51	6.45	6.34	6.45	6.4	6.35	6.35	6.13	6.34	6.28	6.27	6.73	6.77	6.66	6.45	6.31	6.24	6.26	6.2	6.07	6	5.92											3.00	6.17	6.26	7.38	0.662	4.26
	3	7.96	7.96	7.43	7.45	7.53	7.46	7.49	7.41	7.37	7.4	7.41	7.69	7.62	7.71	7.63	7.51	7.41	7.35	7.29	7.22	7.14	7.08											3.00	7.14	7.34	8.02	0.709	5.02
	3	7.62	7.63	7.37	7.39	7.46	7.37	7.39	7.3	7.26	7.27	7.24	7.60	7.7	7.67	7.46	7.36	7.23	7.13	7.06	6.91	6.76	6.68										3.00	6.92	7.12	8.03	0.762	5.03	
	3	7.35	7.34	7.28	7.38	7.55	7.48	7.46	7.4	7.36	7.4	7.43	7.7	7.72	7.95	7.46	7.36	7.27	7.15	7.04	6.9	6.79	6.67										3.00	6.99	7.25	7.98	0.729	4.96	
	3	6.86	6.98	6.67	6.98	7.21	7.19	7.2	7.67	6.96	7	7.04	7.59	7.44	7.39	7.11	6.91	6.72	6.62	6.46	6.36	6.9	6.67										3.00	6.43	6.71	7.81	0.686	4.81	
	3	7.33	7.35	7.28	7.35	7.53	7.46	7.46	7.37	7.31	7.36	7.39	7.65	7.74	7.95	7.43	7.32	7.22	7.1	7	6.86	6.73	6.62										3.00	6.95	7.19	7.91	0.754	4.91	
	3	6.86	6.96	6.8	7	7.22	7.14	7.17	6.98	6.87	6.96	7.07	7.39	7.49	7.27	7.02	6.72	6.46	6.2	6.09	6.77	6.64	6.36										3.00	6.29	6.62	7.89	0.999	4.88	
	3	7.22	7.2	7.11	7.27	7.4	7.28	7.27	7.2	7.21	7.25	7.27	7.58	7.52	7.3	7.23	7.17	7.13	7.02	6.9	6.74	6.64	6.55										3.00	6.88	7.11	7.68	0.672	4.66	
	3	6.88	6.93	6.94	6.96	6.97	6.93	6.93	6.82	6.87	6.9	6.92	6.26	6.19	6.91	6.76	6.68	6.33	6.18	6.06	4.96	4.84	4.76										3.00	6.93	6.71	6.68	0.637	3.98	
	3	7.86	7.03	6.79	7.11	7.19	6.99	7.62	6.81	6.98	6.98	6.99	7.69	7.59	7.62	6.84	6.69	6.57	6.49	6.39	6.26	6.17	6.09										3.00	6.62	6.70	8.13	0.706	5.13	
	3	6.57	6.98	6.22	6.61	6.71	6.41	6.5	6.14	6.22	6.48	6.43	7.36	7.37	6.49	6.14	6.08	6.04	6.01	5.43	5.34	5.25	5.17										3.00	6.03	6.05	8.31	0.919	5.33	
	3	0.23	0.24	0.08	0.07	0.16	0.1	0.12	0.03	7.95	7.97	7.95	0.25	0.2	0.07	7.93	7.79	7.65	7.54	7.45	7.36												3.00	7.69	7.76	8.63	0.656	5.63	
	3	0.36	0.34	0.2	0.15	0.2	0.17	0.2	0.11	0.09	0.08	0.08	0.32	0.44	0.35	0.28	0.17	0.04	7.99	7.94	7.74	7.65	7.57										3.00	7.89	7.84	8.93	0.698	5.63	
	3	0.44	0.4	0.46	0.41	0.45	0.42	0.44	0.36	0.32	0.34	0.4	0.60	0.76	0.69	0.66	0.65	0.64	0.53	0.24	0.15	0.07	0										3.00	0.46	0.34	0.89	0.027	0.89	
	3	0.93	0.98	0.75	0.72	0.63	0.65	0.69	0.81	0.77	0.98	0.96	0.24	0.25	0.21	0.19	0.08	0.97	0.95	0.95	0.95	0.95	0.96										3.00	0.93	0.72	0.95	0.073	6.28	
	3	7.79	7.79	7.64	7.68	7.77	7.71	7.74	7.66	7.61	7.64	7.66	7.92	8.06	7.86	7.76	7.68	7.69	7.62	7.46	7.36	7.31											3.00	7.39	7.67	8.23	0.726	5.23	
	3	6.7	6.7	6.59	6.54	6.65	6.67	6.69	6.62	6.58	6.72	6.69	6.99	7.02	6.89	6.77	6.62	6.48	6.36	6.27	6.19	6.11	6.03										3.00	6.62	6.95	7.04	0.676	4.04	
	3	6.43	6.46	6.36	6.3	6.39	6.4	6.44	6.36	6.37	6.38	6.36	6.69	6.73	6.69	6.46	6.3	6.15	6.06	6.02	6.06	6.04	6.09										3.00	6.46	6.66	6.73	0.688	3.73	
	3	9.22	9.23	9.18	9.25	9.6	9.73	9.74	9.69	9.62	9.68	9.61	10.09	10.15	10.12	10.07	9.9	9.72	9.56	9.45	9.34	9.24	9.15										3.00	9.23	9.25	10.15	0.996	7.15	
	3	0.61	0.6	0.42	0.41	0.73	0.76	0.71	0.66	0.72	0.6	0.67	0.91	0.91	0.81	0.85	0.84	0.72	0.6	0.49	0.4	0.39	0.3										3.00	0.62	0.49	0.11	0.046	6.11	
	3	0.56	0.52	0.4	0.37	0.43	0.4	0.42	0.34	0.3	0.34	0.4	0.66	0.76	0.68	0.65	0.54	0.43	0.33																				

Table A7
Weekly Average Water Stages at Key Indicator Cells for Alternative 6D

Model Layer	Cell	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	
On30oc_Par03_05_R00a	2	25037	7.94	7.96	7.96	7.99	7.97	7.96	7.9	7.96	7.72	7.68	7.68	7.6	7.63	7.47	7.41	7.29	7.24	7.37	7.33	7.23	7.22	8.14	8.22	8.17	8.89	8.92	8.86	8.62	8.86	8.37
	3	25037	7.94	7.94	7.93	7.97	7.98	7.72	7.15	7.12	7.08	7.08	7.08	6.98	6.98	6.84	6.77	6.64	6.71	6.85	6.72	6.62	7.28	7.63	7.68	7.63	7.92	8.2	7.98	7.82	7.75	
	5	25045	8.15	8.14	8.15	8.12	8.1	8.1	8.11	8.09	8.09	8.08	8.08	8.05	8.03	8.04	8.02	8.06	8.07	8.05	8.01	8.02	8.35	8.31	8.32	8.34	8.55	8.51	8.44	8.4	8.38	8.34
	20	25026	7.76	7.77	7.76	7.71	7.67	7.66	7.6	7.67	7.64	7.61	7.6	7.6	7.3	7.26	7.14	7.09	7.27	7.32	7.1	7.61	8.09	8.11	8.06	8.37	8.7	8.68	8.6	8.33	8.26	
	30	25080	7.89	7.98	8	7.96	7.98	7.92	7.89	7.84	7.87	7.78	7.77	7.68	7.62	7.68	7.6	7.39	7.33	7.43	7.37	7.28	7.79	8.22	8.31	8.28	8.98	8.9	8.75	8.64	8.68	8.62
	31	21277	7.04	7.01	6.95	6.9	6.85	6.84	6.75	6.77	6.7	6.72	6.74	6.65	6.51	6.5	6.41	6.17	6.39	6.85	6.62	6.4	7.35	7.77	7.7	7.55	7.64	8.24	7.97	7.77	7.63	7.54
	21620	7.99	7.96	7.92	7.47	7.44	7.42	7.36	7.33	7.28	7.26	7.27	7.22	7.13	7.05	7	6.85	6.79	7.87	7.1	6.97	7.48	8.05	8.12	8.04	8.31	8.72	8.54	8.35	8.22	8.12	
	21269	7.83	7.81	7.89	7.62	7.69	7.47	7.42	7.38	7.36	7.32	7.32	7.27	7.19	7.13	7.08	6.96	6.89	7.12	7.12	7.01	7.61	8.03	8.13	8.07	8.36	8.71	8.58	8.39	8.28	8.19	
	21891	7.52	7.5	7.48	7.42	7.4	7.37	7.3	7.27	7.22	7.2	7.23	7.17	7.04	6.95	6.9	6.89	6.88	7.89	7.13	6.91	7.49	8.1	8.09	7.95	8.25	8.73	8.48	8.25	8.11	8.02	
	21871	7.45	7.43	7.41	7.35	7.31	7.27	7.26	7.17	7.13	7.11	7.11	7.05	6.95	6.92	6.86	6.75	6.68	6.87	6.86	6.74	7.26	7.73	7.66	7.67	8.15	8.49	8.24	8.21	8.11	8.04	
	22336	7.38	7.33	7.31	7.23	7.19	7.14	7.09	7.03	6.98	6.96	6.97	6.92	6.83	6.76	6.69	6.64	6.43	6.76	6.73	6.66	7.14	7.67	7.59	7.56	8.03	8.48	8.2	8.03	7.99	7.96	
	23335	7.01	6.97	6.95	6.85	6.75	6.7	6.62	6.57	6.5	6.48	6.52	6.43	6.29	6.12	6.01	5.74	5.8	6.26	6.12	5.9	6.77	7.19	7.3	7.31	7.98	7.95	7.67	7.52	7.44	7.4	
	23331	7.05	7.05	7.05	6.85	6.74	6.65	6.58	6.54	6.48	6.49	6.54	6.43	6.27	6.17	6.1	5.88	6.01	6.42	6.33	6.09	6.89	7.22	7.22	7.21	7.35	7.63	7.35	7.23	7.22	7.25	
	23337	7.62	7.66	7.64	7.66	7.69	7.47	7.33	7.28	7.23	7.2	7.24	7.18	7.06	6.93	6.86	6.66	6.66	6.86	6.87	6.66	7.32	7.74	7.77	7.7	8.04	8.37	8.09	7.9	7.61	7.76	
	25477	7.27	7.3	7.28	7.19	7.1	7.03	6.92	6.9	6.84	6.85	6.9	6.8	6.68	6.69	6.62	6.48	6.47	6.78	6.63	6.39	7.28	7.63	7.45	7.34	7.68	7.95	7.62	7.46	7.4	7.37	
	25835	6.85	6.72	6.71	6.62	6.55	6.48	6.43	6.42	6.38	6.41	6.5	6.35	6.23	6.18	6.18	6.08	6.14	6.45	6.37	6.11	7.14	8.54	8.85	8.72	7.32	7.15	6.75	6.74	6.74	6.77	
	21817	6.62	6.66	6.65	6.54	6.47	6.41	6.35	6.35	6.29	6.34	6.42	6.27	6.14	6.12	6.09	5.95	6.09	6.43	6.25	6.03	7.26	7.98	8.89	8.69	7.4	7.25	6.75	6.71	6.7	6.75	
	25836	6.38	6.39	6.39	6.12	6.11	6.08	6.07	6.03	6.05	6.08	6.09	6.02	5.98	6	5.96	5.86	6.09	6.38	6.22	5.98	6.83	8.46	8.81	8.69	6.48	6.31	6.32	6.38	6.34	6.37	
	21495	6.15	6.14	6.14	6.06	6.05	5.99	5.97	5.97	5.94	5.98	6	5.92	5.85	5.87	5.83	5.77	5.91	6.1	5.95	5.85	6.82	8.52	8.47	8.3	8.94	8.72	8.38	8.35	8.3	8.32	
	21807	7.06	7.04	7.02	6.94	6.89	6.85	6.79	6.78	6.72	6.72	6.71	6.63	6.54	6.52	6.44	6.32	6.5	6.89	6.46	6.35	7.15	7.51	7.54	7.45	7.75	8.04	7.65	7.71	7.62	7.55	
	25849	7.67	7.68	7.67	7.61	7.67	7.63	7.68	7.68	7.4	7.37	7.36	7.3	7.23	7.16	7.1	6.99	6.96	7.16	7.09	6.96	7.47	7.88	7.92	7.86	8.19	8.6	8.31	8.15	8.07	8	
	21894	7.27	7.25	7.25	7.16	7.12	7.09	7.04	7.02	6.97	6.96	6.96	6.88	6.78	6.74	6.68	6.47	6.69	6.82	6.73	6.57	7.3	7.73	7.77	7.69	7.97	8.28	8.1	7.96	7.95	7.77	
	18781	7.35	7.35	7.32	7.21	7.1	7	6.94	6.85	6.82	6.78	6.89	6.78	6.6	6.47	6.43	6.23	6.11	6.57	6.85	6.33	6.85	7.35	7.4	7.35	7.69	7.9	7.58	7.43	7.37	7.34	
	18786	6.9	6.79	6.71	6.69	6.44	6.39	6.39	6.36	6.3	6.31	6.36	6.24	6.11	6.21	6.09	5.85	6.23	6.65	6.38	6.36	7.12	7.36	7.19	7.61	7.96	7.69	7.39	7.09	6.96		
	25831	7.28	7.31	7.28	7.19	7.08	6.98	6.87	6.82	6.78	6.73	6.83	6.74	6.66	6.59	6.52	6.37	6	6.47	6.82	6.32	6.84	7.42	7.45	7.37	7.7	7.97	7.65	7.45	7.38	7.33	
	25835	6.62	6.64	6.65	6.35	6.35	6.34	6.15	6.12	6.03	5.98	5.93	5.48	5.24	5.09	5.04	4.91	4.82	5.95	5.93	5.2	6.83	7.35	7.34	7.15	7.95	7.93	7.58	7.22	7.03	6.97	
	23390	7.2	7.14	7.12	7.19	7.07	6.97	6.88	6.86	6.8	6.82	6.96	6.75	6.58	6.49	6.46	6.28	6.32	6.79	6.74	6.33	7.2	7.35	7.32	7.23	7.6	7.77	7.36	7.27	7.27	7.28	
	23396	6.41	6.72	6.77	6.49	6.38	6.38	6.43	6.48	6.38	6.38	6.12	6.06	6.17	6.12	6.03	5.76	5.84	6.66	6.1	5.89	6.37	6.27	6.13	6.01	6.67	6.6	6.96	6.87	6.86	6.79	
	25931	6.65	6.75	6.75	6.65	6.45	6.39	6.32	6.34	6.25	6.28	6.4	6.22	6.03	5.99	5.99	5.78	5.93	6.95	6.39	5.99	7.95	7.75	7.37	6.94	7.75	8.02	7.66	6.94	6.91	6.82	
	25836	5.89	6.04	6.06	5.81	5.85	5.89	5.86	5.66	5.46	5.44	5.54	5.38	5.15	5.14	5.18	4.97	5.21	6.21	5.82	5.45	7.4	8.15	7.36	6.54	7.59	8.3	6.73	6.27	6.21	6.15	
	21271	7.44	7.42	7.39	7.39	7.3	7.28	7.23	7.2	7.16	7.13	7.08	6.92	6.86	6.8	6.71	6.59	6.82	6.86	6.6	6.71	7.13	6.99	6.79	7.47	8.01	8.02	7.9	8.17	8.04	7.96	
	21791	7.61	7.49	7.49	7.41	7.38	7.34	7.29	7.25	7.21	7.19	7.19	7.13	7.08	7	6.94	6.83	6.77	6.93	6.83	6.84	7.34	7.8	7.89	7.89	8.22	8.95	8.41	8.27	8.18	8.1	
	25880	6	6.05	6.07	6.03	6.01	6	5.95	5.91	5.88	5.85	5.84	5.78	5.68	5.62	5.58	5.45	5.39	5.48	5.43	7.34	7.84	8.27	8.35	8.32	8.62	8.94	8.6	8.63	8.64	8.58	
	19990	6.66	6.75	6.75	6.74	6.71	6.69	6.61	6.56	6.52	6.47	6.43	6.33	6.23	6.14	6.07	5.86	5.85	7.89	7.81	7.72	8.22	8.66	8.72	8.67	8.94	9.26	9.12	8.96	8.96	8.89	
	25876	7.6	7.61	7.61	7.56	7.51	7.67	7.67	7.68	7.64	7.6	7.58	7.43	7.36	7.28	7.23	7.11	7.08	7.23	7.18	7.06	7.86	7.88	8.04	7.98	8.3	8.63	8.44	8.28	8.2	8.12	
	24877	6.06	6.05	5.99	5.91	5.84	5.75	5.74	5.69	5.49	5.44	5.47	5.15	4.95	4.88	4.64	4.3	4.14	4.51	4.75	4.81	5.79	6.35	6.4	6.47	6.75	7.03	6.64	6.73	6.64	6.57	
	24867	5.95	5.46	5.4	5.22	5.15	5	4.96	4.88	4.72	4.64	4.66	4.46	4.37	4.38	4.15	4.04	4.54	4.78	4.85	5.69	6.16	6.13	6.11	6.39	6.6	6.37	6.23	6.18	6.18	6.19	
	19177	9.83	9.86	9.89	9.83	9.76	9.66	9.61	9.4	9.34	9.27	9.2	9.08	8.96	8.87	8.77	8.69	8.44	8.4	9.33	9.31	9.21	9.86	9.92	9.84	9.11	9.6	9.26	9.17	9.16	9.14	
	19215	8.72	8.77	8.74	8.67	8.6	8.53	8.44	8.37	8.33	8.28	8.24	8.15	8.03	7.93	7.86	7.73	7.61	7.64	7.65	7.57	8.05	8.43	8.43	8.37	8.89	8.95	8.75	8.57	8.51	8.48	
	23327	8.15	8.19	8.21	8.17	8.14	8.12	8.06	8.03	7.99	7.96	7.93	7.85	7.77	7.7	7.64	7.53	7.46	7.56	7.5	7.41	7.91	8.34	8.41	8.36	8.69	9.03	8.67	8.74	8.68	8.61	
	23336	7.59	7.61	7.6	7.53	7.67	7.64	7.63	7.68	7.64	7.4	7.41	7.36	7.26	7.15	7.08	6.86	6.88	7.85	7.86	6.94	7.44	7.88	7.99	7.87	8.21	8.64	8.29	8.1	8.01	7.96	
	23390	6.31	6.39	6.43	6.39	6.37	6.36	6.3	6.25	6.22	6.18	6.15	6.08	5.98	5.9	5.84	5.72	5.64	7.71	7.64	7.51	7.84	7.95	8.05								

Table A7 (Continued)
Weekly Average Water Stages at Key Indicator Cells for Alternative 6D

Model Layer	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Week 48	Week 49	Week 50	Week 51	Week 52	Minimum	Mean	Median	Maximum	Std Dev	Range
012000a_Plan0D_00_W030	3	3.45	3.44	3.31	3.3	3.36	3.32	3.34	3.27	3.22	3.26	3.23	3.25	3.27	3.25	3.24	3.21	3.2	3.12	3.04	2.96	2.89	3.00	2.96	3.14	3.02	0.807	5.02
	3	7.02	7.02	7.17	7.12	7.17	7.17	7.13	7.08	7.01	7.03	7.04	7.09	7.07	7.02	7.04	7.04	7.04	7.04	7.04	7.04	7.04	3.00	7.36	7.54	8.20	0.732	5.20
	3	6.39	6.39	6.39	6.37	6.34	6.34	6.34	6.34	6.29	6.31	6.31	6.39	6.41	6.39	6.37	6.38	6.31	6.19	6.17	6.18	6.12	3.00	6.17	6.21	6.66	0.467	3.66
	3	5.34	5.32	5.19	5.15	5.23	5.17	5.19	5.11	5.07	5.09	5.11	5.37	5.49	5.41	5.36	5.25	5.13	5.03	4.96	4.87	4.75	3.00	4.89	5.03	5.70	0.793	5.70
	3	4.64	4.69	4.46	4.4	4.64	4.47	4.43	4.36	4.3	4.34	4.36	4.67	4.87	4.83	4.82	4.4	4.3	4.21	4.13	4.06	3.98	3.00	4.06	4.22	4.90	0.836	4.90
	3	7.65	7.66	7.48	7.5	7.5	7.5	7.52	7.42	7.37	7.39	7.36	7.74	7.85	7.80	7.74	7.7	7.17	7.09	7	6.96	6.92	3.00	7.12	7.28	8.24	0.793	5.24
	3	8.22	8.27	8.06	8.03	8.11	8.08	8.07	7.97	7.92	7.93	7.92	8.21	8.36	8.34	8	7.89	7.77	7.69	7.62	7.59	7.55	3.00	7.64	7.77	8.72	0.803	5.72
	3	9.30	9.27	9.13	9.09	9.16	9.1	9.11	9.03	7.98	7.99	7.98	9.36	9.39	9.3	9.32	9.09	7.96	7.86	7.79	7.7	7.63	3.00	7.70	7.86	9.71	0.804	5.71
	3	8.13	8.13	7.96	7.93	8.05	7.97	8	7.89	7.94	7.95	7.94	8.16	8.3	8.35	8.03	7.89	7.76	7.69	7.61	7.57	7.43	3.00	7.58	7.66	8.73	0.796	5.73
	3	8.16	8.13	7.98	7.94	7.99	7.96	7.99	7.89	7.94	7.94	7.94	8.11	8.23	8.19	8.06	7.92	7.8	7.7	7.62	7.54	7.47	3.00	7.61	7.70	8.49	0.796	5.49
	3	7.96	7.94	7.8	7.77	7.94	7.8	7.83	7.74	7.68	7.7	7.69	7.85	8.07	7.85	7.86	7.74	7.61	7.52	7.45	7.38	7.31	3.00	7.37	7.52	8.36	0.779	5.36
	3	7.61	7.48	7.36	7.34	7.4	7.39	7.43	7.33	7.31	7.32	7.31	7.44	7.62	7.49	7.41	7.3	7.19	7.1	7.04	6.96	6.89	3.00	6.91	7.10	7.86	0.763	4.96
	3	7.23	7.22	7.19	7.19	7.23	7.22	7.23	7.18	7.18	7.19	7.19	7.32	7.32	7.32	7.31	7.16	7.06	7	6.97	6.9	6.91	3.00	6.93	7.06	7.63	0.679	4.63
	3	7.05	7.06	7.15	7.02	7.04	7.09	7.1	7.02	7.07	7.08	7.08	7.23	7.23	7.23	7.23	7.07	7.07	7.07	7.07	7.07	7.07	3.00	7.07	7.07	7.07	0.752	5.37
	3	7.46	7.47	7.37	7.46	7.46	7.48	7.48	7.41	7.38	7.42	7.44	7.7	7.9	7.61	7.61	7.42	7.36	7.29	7.23	7.12	7	3.00	7.12	7.30	7.96	0.690	4.96
	3	6.05	6.05	6.14	6.03	6.3	6.04	6.03	6.09	6.1	6.01	6.01	6.16	6.37	6.35	6.34	6.07	6.05	6.05	6.05	6.05	6.05	3.00	6.05	6.12	7.32	0.577	4.32
	3	6.95	6.95	6.89	6.93	6.86	6.91	6.9	6.79	6.79	6.81	6.79	6.91	7.26	7.24	6.79	6.88	6.81	6.88	6.82	6.83	6.8	3.00	6.86	6.86	7.43	0.999	4.43
	3	6.44	6.36	6.32	6.48	6.36	6.37	6.32	6.34	6.32	6.36	6.46	6.49	6.36	6.32	6.29	6.19	6.17	6.15	6.12	6.09	6.07	3.00	6.23	6.19	6.62	0.496	3.02
	3	6.41	6.37	6.27	6.43	6.34	6.33	6.33	6.27	6.29	6.29	6.31	6.66	6.6	6.32	6.27	6.22	6.13	6.1	6.06	6.04	6.02	3.00	6.14	6.14	6.91	0.507	3.91
	3	7.62	7.62	7.49	7.51	7.64	7.48	7.4	7.43	7.36	7.4	7.39	7.73	7.81	7.69	7.62	7.4	7.27	7.26	7.17	7.1	7.03	3.00	7.11	7.26	9.04	0.729	5.04
	3	6.06	6.06	5.96	5.98	6.05	6	6.03	5.96	5.9	5.92	5.9	6.33	6.23	6.17	6.06	5.95	5.85	5.77	5.71	5.63	5.56	3.00	5.65	5.85	6.90	0.593	5.08
	3	7.66	7.64	7.51	7.51	7.77	7.7	7.71	7.63	7.68	7.6	7.69	7.86	8.01	7.9	7.82	7.69	7.67	7.46	7.38	7.3	7.26	3.00	7.32	7.48	8.29	0.764	5.29
	3	7.39	7.38	7.32	7.44	7.6	7.51	7.44	7.4	7.44	7.47	7.73	7.75	7.59	7.48	7.4	7.31	7.24	7.13	7.02	6.94	6.82	3.00	7.08	7.32	7.90	0.706	4.90
	3	6.99	7.02	6.99	7.02	7.25	7.22	7.23	7.11	6.99	7.04	7.06	7.33	7.47	7.32	7.14	6.94	6.76	6.59	6.44	6.29	6.1	3.00	6.93	6.76	7.85	0.896	4.95
	3	7.4	7.41	7.32	7.49	7.69	7.62	7.62	7.43	7.38	7.43	7.46	7.71	7.79	7.61	7.49	7.36	7.21	7.12	7.04	6.98	6.79	3.00	7.06	7.29	7.97	0.729	4.97
	3	7.02	7.01	6.94	7.05	7.27	7.19	7.22	7.03	6.93	7.01	7.06	7.36	7.54	7.32	7.07	6.77	6.61	6.29	6.1	5.93	5.71	3.00	6.39	6.63	7.93	0.953	4.93
	3	7.36	7.33	7.27	7.47	7.63	7.4	7.39	7.34	7.36	7.38	7.4	7.71	7.86	7.44	7.36	7.31	7.26	7.22	7.14	6.97	6.79	3.00	7.06	7.27	7.77	0.671	4.77
	3	5.99	5.93	5.86	6.05	5.99	5.94	5.94	5.83	5.88	5.91	5.93	6.27	6.19	5.82	5.79	5.57	5.33	5.19	5.09	5	4.95	3.00	5.96	5.73	6.57	0.896	3.57
	3	7.05	7.07	6.97	7.12	7.15	6.97	7	6.91	6.98	6.97	6.98	7.33	7	6.91	6.89	6.88	6.83	6.46	6.36	6.27	6.2	3.00	6.86	6.75	8.02	0.722	5.02
	3	6.07	6.05	6.22	6.07	6.7	6.4	6.48	6.13	6.22	6.46	6.43	7.36	6.47	6.13	6.05	5.63	5.62	5.46	5.30	5.23	5.3	3.00	6.07	6.06	6.90	0.801	5.30
	3	6.04	6.04	7.09	7.07	7.96	7.88	7.9	7.78	7.77	7.75	6.96	6.21	6.86	7.87	7.84	7.71	7.61	7.53	7.45	7.4	7.36	3.00	7.50	7.61	8.98	0.701	5.98
	3	6.22	6.19	6.04	6	6.06	6.02	6.04	5.94	5.9	5.9	6.17	6.29	6.2	6.12	5.99	5.87	5.77	5.69	5.61	5.54	5.47	3.00	5.68	5.77	6.66	0.746	4.66
	3	5.63	5.63	5.5	5.44	5.49	5.46	5.46	5.4	5.35	5.39	5.44	5.71	5.6	5.73	5.7	5.55	5.47	5.36	5.27	5.19	5.11	3.00	5.13	5.27	5.94	0.823	5.94
	3	9	9.95	9.93	9.9	9.9	9.92	9.96	9.88	9.84	9.93	9.93	9.9	9.94	9.27	9.36	9.16	8.92	8.81	8.71	8.63	8.54	3.00	8.99	9.76	9.34	0.879	9.34
	3	8.21	8.2	8.08	8.1	8.18	8.14	8.16	8.08	8.03	8.06	8.06	8.33	8.46	8.39	8.31	8.2	8.09	7.99	7.94	7.84	7.76	3.00	7.77	7.98	9.63	0.777	5.63
	3	6.68	6.68	6.57	6.57	6.62	6.63	6.68	6.59	6.55	6.59	6.55	6.86	6.95	6.86	6.74	6.59	6.44	6.32	6.23	6.15	6.07	3.00	6.03	6.32	7.03	0.877	4.03
	3	6.27	6.39	6.27	6.33	6.34	6.34	6.37	6.29	6.31	6.33	6.3	6.63	6.67	6.61	6.37	6.31	6.07	6.9	6.74	6.62	6.4	3.00	6.43	6.60	6.67	0.844	3.67
	3	9.25	9.26	9.21	9.28	9.64	9.78	9.77	9.71	9.65	9.71	9.84	10.12	10.16	10.14	10.1	9.93	9.74	9.59	9.43	9.37	9.27	3.00	9.23	9.26	10.16	0.899	7.16
	3	6.97	6.96	6.88	6.97	6.77	6.79	6.84	6.77	6.72	6.79	6.86	9.12	9.16	9.07	9	8.9	8.76	8.66	8.56	8.47	8.37	3.00	8.88	8.96	9.16	0.893	6.16
	3	6.71	6.67	6.54	6.51	6.58	6.54	6.56	6.49	6.44	6.49	6.44	6.6	6.59	6.53	6.47	6.37	6.29	6.21	6.13	6.05	3.00	6.19	6.37	9.03	0.837	6.03	
	3	6.04	6.04	7.93	7.99	8.1	8.08	8.09	8	7.94	7.98	8.01	8.26	8.4	8.26	8.19	8.07	7.87	7.69	7.5	7.31	7.23	3.00	7.67	7.87	9.14	0.769	5.64
	3	6.06	6.02	6.69	6.64	6.7	6.69	6.71	6.64	6.6	6.66	6.74	9.82	9.89	9.81	9.89	9.86	9.77	9.66	9.66	9.47	9.39	3.00	9.36	9.61	9.16	0.863	6.16
	3	6.41	6.39	6.25	6.22	6.27	6.21	6.23	6.15	6.11	6.13	6.14	6.41	6.52	6.45	6.4	6.26	6.17	6.06	5.96	5.79	5.72	3.00	5.74	6.06	6.75	0.805	5.75
	3	6.99	6.96	6.87	6.9	6.98	6.94	6.98	6.9	6.9	6.93	6.96	9.67	9.49	9.46	9.36	9.23	9.1	8.99	8.89	8.79	8.71	3.00	8.77	8.96	9.67	0.903	6.67
	3	7.68	7.68	7.51	7.46	7.52	7.51	7.56	7.48	7.43	7.44	7.43	7.67	7.81	7.69	7.6	7.46	7.33	7.23	7.15	7.07	6.99	3.00	6.97	7.15	7.96	0.815	4.96
	3	6.39	6.3	6.19	6.23	6.32	6.14	6.3	6.03	6.03	6.08	6.06	6.37	6.46	6.36	6.26	6.16	6.04	5.94	5.84	5.75	5.66	3.00	5.89	5.99	7.73	0.703	4.73
	3	5.79	5.66	5.5	5.67	5.68	5.63	5.73	5.56	5.59	5.61	5.63	5.82	5.61	5.62	5.4	5.33	5.23	5.16	5.09	5.0							

Table A8
Average Yearly Water Depth and Storage, Wet Year

Proposed Plan 1995 Precipitation with 1995 Operations DRAFT - 4/27/2000	Notes	Average Annual Depth NESRS [ft]	Average Annual Storage NESRS [acre-ft]
No Plan - Base 1983	1	1.56	97,698
No Plan - Base 1995		1.75	109,568
Future Without Project with Authorized Plan # 1 in Place		2.37	148,311
Future With Project Potential LPAs			
Plan # 2B		2.33	145,423
Plan # 3		2.59	162,058
Plan # 4	2	2.51	157,142
Plan # 5	2	2.51	157,142
Plan # 6B		2.48	154,895
Plan # 6C		2.37	148,367
Plan # 6D		2.47	154,507
Plan # 7	2	2.51	157,142
Plan # 8A		2.51	156,790
Plan # 9	3	2.35	146,867

Area of Model Grid = 913,905 Ac
Area of NESRS = 63,000 Ac

¹ All plans reflect 1995 Precipitation,
1995 Operations except Base 83

² All use same model run

³ Average of Alt 1 and Alt 2B

Table A9
Average Yearly Water Depth and Storage, Dry Year

Proposed Plan 1989 Precipitation with 1995 Operations DRAFT - 4/27/2000	Notes	Average Annual Depth NESRS [ft]	Average Annual Storage NESRS [acre-ft]
No Plan - Base 1983	1	0.36	22,495
No Plan - Base 1995		0.38	23,904
Future Without Project with Authorized Plan # 1 in Place		0.92	57,614
Future With Project Potential LPAs			
Plan # 2B		0.93	58,328
Plan # 3		0.97	60,949
Plan # 4	2	0.95	59,158
Plan # 5	2	0.95	59,158
Plan # 6B		0.95	59,142
Plan # 6C		0.93	58,302
Plan # 6D		0.94	58,908
Plan # 7	2	0.95	59,158
Plan # 8A		0.93	58,099
Plan # 9	3	0.93	57,971

Area of Model Grid = 913,905 Ac
Area of NESRS = 63,000 Ac

¹ All plans reflect 1989 Precipitation,
1995 Operations except Base 83

² All use same model run

³ Average of Alt 1 and Alt 2B

⁴ This plan was not run for dry year

Table A10

Hydroperiods of Selected Model Indicator Cells (Number of Days Based on the Average of 1989 and 1995 Stages)													
Model Indicator Cell	Base83	Base95	Plan 1	Plan 2B	Plan 3	Plan 4	Plan 5	Plan 6B	Plan 6C	Plan 6D	Plan 7	Plan 8A	Plan 9
20457	207	187	332	352	364	360	360	353	341	352	360	353	342
20737	147	104	0	0	44	186	186	186	0	149	186	177	0
20743	84	20	0	0	11	122	122	7	0	0	122	68	0
20726	192	186	230	258	345	269	269	264	237	261	269	263	244
20980	215	191	363	364	364	364	364	364	364	364	364	364	364
21277	4	0	0	41	11	20	20	64	64	28	20	87	21
21529	142	105	186	232	186	186	186	190	191	189	186	186	209
21259	157	132	186	231	191	188	188	191	191	191	188	191	209
21891	116	44	178	219	185	183	183	190	191	187	183	185	199
21971	156	136	186	192	187	186	186	191	191	188	186	186	189
22335	141	102	185	192	186	186	186	189	191	187	186	186	189
23325	127	70	177	186	155	183	183	186	186	185	183	183	182
23331	62	0	159	185	80	169	169	183	183	182	169	177	172
20297	62	78	0	0	20	182	182	155	28	161	182	184	0
20477	9	0	0	0	0	8	8	0	0	0	8	4	0
20838	0	0	0	0	0	0	0	0	0	0	0	0	0
21017	0	0	0	0	0	0	0	0	0	0	0	0	0
20925	7	0	0	0	0	4	4	0	0	0	4	0	0
21105	0	0	0	0	0	0	0	0	0	0	0	0	0
21007	112	48	1	0	26	156	156	137	0	100	156	4	1
20469	177	155	6	0	71	229	229	207	171	205	229	222	3
21094	137	75	2	0	55	184	184	180	118	164	184	190	1
19761	208	155	282	244	271	275	275	248	227	258	275	271	263
19766	38	56	102	90	96	96	96	89	88	91	96	94	95
20031	93	126	204	163	192	205	205	171	162	185	205	207	184
20036	0	0	0	0	0	0	0	0	0	0	0	0	0
20390	0	0	0	0	0	0	0	0	0	0	0	0	0
20396	0	0	0	0	0	0	0	0	0	0	0	0	0
20931	0	0	0	0	0	0	0	0	0	0	0	0	0
20936	0	0	0	0	0	0	0	0	0	0	0	0	0
21271	105	28	119	176	186	180	180	186	182	182	180	186	148
21791	162	142	186	192	190	188	188	191	191	191	188	188	189
20890	233	200	364	364	364	364	364	364	364	364	364	364	364
19990	364	364	364	364	364	364	364	364	364	364	364	364	364
20378	192	180	218	215	364	286	286	249	220	247	286	282	217
24577	135	135	154	159	152	156	156	158	159	157	156	156	157
24587	83	41	136	143	138	140	140	143	145	142	140	140	140
19177	364	364	364	364	364	364	364	364	364	364	364	364	364
19213	364	364	364	364	364	364	364	364	364	364	364	364	364
20357	267	218	364	364	364	364	364	364	364	364	364	364	364
20206	223	177	253	243	363	324	324	300	251	304	324	311	248
20350	342	317	364	364	364	364	364	364	364	364	364	364	364
20900	192	186	234	272	307	262	262	261	245	259	262	261	253
19274	364	364	364	364	364	364	364	364	364	364	364	364	364
23729	147	137	177	186	177	182	182	185	185	184	182	183	182

Table A11

Spatial Changes in NESRS Hydroperiod												
	Base95	Plan 1	Plan 2B	Plan 3	Plan 4	Plan 5	Plan 6B	Plan 6C	Plan 6D	Plan 7	Plan 8A	Plan 9
Number of Acres of <i>Increased</i> Hydroperiod as Compared to Base95	0	30207	29799	30982	30982	30982	30982	30590	30982	30982	30982	30003
Number of Acres of <i>Decreased</i> Hydroperiod as Compared to Base95	0	775	1183	0	0	0	0	392	0	0	0	979
Number of Acres of <i>Increased</i> Hydroperiod as Compared to Plan 1	775	0	6669	9759	9650	9650	9247	8319	9315	9650	9558	3335
Number of Acres of <i>Decreased</i> Hydroperiod as Compared to Plan 1	30207	0	3501	224	283	283	736	1851	668	283	425	1751

**Table A12
Canal Dimensions**

Alternative No. 6C

Corps Calculated Flow Rate =	500 cfs	Delta H	0.5 ft
Total Length =	35410 ft	Slope =	1.41E-05 ft/ft
Flow Rater per LF =	0.0141203 ft/lf	El. G.S =	6.5 ft/ft

Segment - South to North	Segment Length	Canal Dimensions		
		Bottom	Bottom	Bottom
		Width	Depth	Elevation
		(ft)	(ft)	(ft)
A-B	3575	15	8	-1.5
B-C	2625	20	9.5	-3
C-D	1300	20	9.5	-3
D-E	2630	25	11	-4.5
E-F	5265	25	11	-4.5
F-G	2600	30	12.5	-6
G-H	1330	30	12.5	-6
H-I	5300	40	12.5	-6
I-J	2625	40	12.5	-6
J-K	8160	40	15	-8.5

Alternative No. 6D

Corps Calculated Flow Rate =	500 cfs	Delta H	0.5 ft
Total Length =	20,773 ft.	Slope =	2.407E-05 ft/ft
Flow Rater per LF =	0.02406971 cfs/l.ft	El. G.S =	6.5 ft

Segment - South to North	Segment Length	Canal Dimensions		
		Bottom	Bottom	Bottom
		Width	Depth	Elevation
		(ft)	(ft)	(ft)
0	9098	30	12.5	-6
0	11675	40	15	-8.5

Table A13
Engineering Cost Estimate – Alternative 6C

Description	Quantity	Unit	Unit Cost	Extended Cost
Blast and Excavate	840,213	CY	\$7.00	\$5,881,492
Crush and Process Rock	840,213	CY	\$2.00	\$1,680,426
Perimeter Levee				
On-site Haul & Place				
1/2 Mile (20%)	78433	CY	\$2.00	\$156,867
1 Mile (40%)	156867	CY	\$2.75	\$431,384
2 Miles (40%)	156867	CY	\$3.50	\$549,034
Shape and Compact	392167	CY	\$1.40	\$549,034
Internal Levee				
On-site Haul & Place				
1/2 Mile (20%)	20774	CY	\$2.00	\$41,548
1 Mile (40%)	41548	CY	\$2.75	\$114,256
2 Miles (40%)	41548	CY	\$3.50	\$145,417
Shape and Compact	103869	CY	\$1.40	\$145,417
Geofabrics				
Geomembrane and nonwoven geotextile(perimeter levee)	1713844	SF	\$0.55	\$942,614
Woven Geotextile (perimeter and interior levee)	324592	SY	\$1.40	\$454,428
Pump Station Access Road				
Fill	1000	CY	\$12.00	\$12,000
8" Rock Base	2224	SY	\$8.50	\$18,904
2" Wear Surface	1986	SY	\$6.50	\$12,909
Conveyance Channel				
S-357 Pump Station Discharge	1	EA	\$500,000	\$500,000
Demolition (1)				
Clear and Grub	31	AC	\$2,000	\$62,000
Homes (wells, septic, pads etc.)	147	EA	\$8,000	\$1,176,000
Regrade to Wetland (scrape down 0.5 feet and remove unusable material)	440	AC	\$4,000	\$1,760,000
Pump Station South S-357 (500 cfs)	1	EA	\$5,040,000	\$5,040,000
Pipeline to C-111, (120-inch-diameter)	2000	LF	\$960	\$1,920,000
Spreader Swale				
Blast and Excavate	62333	CY	\$3.50	\$218,167
Crush and Process Rock	62333	CY	\$2.00	\$124,667
Perimeter Levee (Haul, shape, compact)	62333	CY	\$4.40	\$274,267
Woven Geotextile	82500	SY	\$1.40	\$115,500
Subtotal Construction				\$22,326,331
Contingency (20%)				\$4,465,266
Total Construction Cost				\$26,791,597
Planning, Engineering, Design, Construction Management (20%)				\$5,358,319
Land Acquisition (2)	1743	AC		\$29,275,723
Total				\$61,425,639

(1) Based on ecological restoration need apportioned from Alternative 6B.

(2) Land Acquisition Values are taken from the Real Estate Appendix.

(Includes cost for easements, fee simple, life estates and those costs required for implementation including raising septic tanks and wells and relocation costs.)

Table A14
Engineering Cost Estimate – Alternative 6D

Description	Quantity	Unit	Unit Cost	Extended Cost
Blast and Excavate	642,897	CY	\$7.00	\$4,500,281
Crush and Process Rock	642,897	CY	\$2.00	\$1,285,794
Perimeter Levee				
On-site Haul & Place				
1/2 Mile (5%)	19127	CY	\$2.00	\$38,254
1 Mile (30%)	114763	CY	\$2.75	\$315,598
2 Miles (40%)	153017	CY	\$3.50	\$535,560
3 Miles (25%)	95636	CY	\$4.50	\$430,361
Shape and Compact	382543	CY	\$1.40	\$535,560
Internal Levee				
On-site Haul & Place				
1/2 Mile (40%)	48747	CY	\$2.00	\$97,495
1 Mile (40%)	48747	CY	\$2.75	\$134,055
2 Miles (20%)	24374	CY	\$3.50	\$85,308
3 Miles (0%)	0	CY	\$4.50	\$0
Shape and Compact	121868	CY	\$1.40	\$170,616
Geofabrics				
Geomembrane and nonwoven geotextile(perimeter levee)	1671784	SF	\$0.55	\$919,481
Woven Geotextile (perimeter and interior levee)	380099	SY	\$1.40	\$532,138
Pump Station Access Road				
Fill	1000	CY	\$12.00	\$12,000
8" Rock Base	2864	SY	\$8.50	\$24,344
2" Wear Surface	2626	SY	\$6.50	\$17,069
Conveyance Channel				
S-357 Pump Station Discharge	1	EA	\$500,000	\$500,000
Demolition (1)				
Clear and Grub	51	AC	\$2,000	\$102,000
Homes (wells, septic, pads etc.)	242	EA	\$8,000	\$1,936,000
Regrade to Wetland (scrape down 0.5 feet and remove unusable material)	728	AC	\$4,000	\$2,912,000
Canal/Road Crossings	280	LF	\$2,400	\$672,000
Pump Station South S-357 (500 cfs)	1	EA	\$5,040,000	\$5,040,000
Pipeline to C-111 , (120-inch-diameter)	2000	LF	\$960	\$1,920,000
Spreader Swale				
Blast and Excavate	62333	CY	\$3.50	\$218,167
Crush and Process Rock	62333	CY	\$2.00	\$124,667
Perimeter Levee (Haul, shape, compact)	62333	CY	\$4.40	\$274,267
Woven Geotextile	82500	SY	\$1.40	\$115,500
Subtotal Construction				\$23,448,515
Contingency (20%)				\$4,689,703
Total Construction Cost				\$28,138,218
Planning, Engineering, Design, Construction Management (20%)				\$5,627,644
Land Acquisition (2)	2881	AC		\$62,494,593
Total				\$96,260,454

(1) Based on Ecological Restoration Need

(2) Land Acquisition Values are taken from the Real Estate Appendix.

(Includes cost for easements, fee simple, life estates and those costs required for implementation including raising septic tanks and wells and relocation costs.)

Table A15
Real Estate Costs – Alternative 6C

	ACRES		PARCELS								
TOTAL IN 8.5 SMA	6413		1994								
Less Acres New >10 Yr Flood Elev	574										
Less New Acq. > 10 Yr Flood Elev	4096		1320								
Net Acres Required for this Alternative	1743										
	FEE SIMPLE ACQUISITION					FLOWAGE EASEMENTS					
LANDS & IMPROVEMENTS	Total Required Acres for Alt. 6	Acres Yet to be Acquired	Number of Parcels	No. Required Fee Simple Acres	Unit Value	Estimated Value Fee Simple	No. Acres Flow. Easement Required	Unit Value	Estimated Values for Flowage Easements	Acquisition Items	TOTAL COSTS
Less Acres Already Acquired:											
Crops of Engineers	663	0	258		663 Prev. Acq. USACE =	\$2,378,200					
State-SFWMD	489	0	160		489 Prev. Acq. SFWMD	\$9,342,510					
Total Already Acquired	1132		419	1132							
Net Acres Yet to Be Acquired	611		215								
Other Federal Acres											
FAA	0	0	0	0	\$9,690	\$0	0	\$5,500	\$0		
USDA	0	0	0	0	\$9,690	\$0	0	\$5,190	\$0		
Miami-Dade County	0	0	0	0	\$9,690	\$0	0	\$5,190	\$0		
Privately-Owned Acres	611	611	215	611	\$9,690	\$5,930,590	0	\$5,190	\$0		
Total Acres											
Imps. To Be Acquired											
Residential Improvements				23	\$87,000	\$2,001,000	0	\$87,000	\$0		
Agric./Com. Imps (incl. Groves/hurricanes)				27	\$1,760	\$47,520	0	\$1,760	\$0		
TOTALS FOR THIS ALT.	1743	611	634	1743	TOTAL ALL FEE	\$19,689,820.0		TOTAL ALL ESMTS	\$0	TOTAL ALL LANDS & IMPS.	\$19,689,820
Total New Acquisition	611	215	611		Total New Fee	\$5,930,590	0	Total New Esmts	\$0	Total New Lands & Imps. =	\$5,930,590
ADMINISTRATIVE COSTS											
Crops Administrative Costs (constant)										USACE ADMIN	\$1,700,000
SFWMD Admin - Willing Sellers					336	\$5,000	\$2,010,000			SFWMD ADMIN	\$3,210,000
SFWMD Admin - Through Eminent Domain					40	\$30,000	\$1,200,000				
				Parcels =	0		Parcels =	0		GRAND TOTAL	\$24,599,820

Table A15 (Continued)
Real Estate Costs – Alternative 6C

RELOCATIONS (P.L. 91-646)	Total Imps. To Be Acquired	Total Commercial or Business Relocs.	Residential Owner Relocations (RHP's plus move costs)	Residential Tenant Relocs (Rent Diff. & Moving)	Relocation Cost Per Household or Commercial Unit	% Estimated to Be Lost Reloc.	Last Reloc. Incr. Factor (at 35%)	Total Relocation Estimate		
Owner-Occupied Residential—Mobile (Regl. Housing & other full benefits)	6		6		\$28,000	65%	7875	\$ 198,713		
Owner-Occupied Residential—Fixed (Regl. Housing & other full benefits)	10		10		\$28,000	65%	7875	\$ 331,188		
Non-Owner-Occupied Residential—Mobile (move costs of structure and contents—see note a)	8		8		\$10,000	N/A	N/A	\$ 80,000		
Non-Owner-Occupied Residential—Fixed (move costs of contents only)	13		13		\$5,000	N/A	N/A	\$ 65,000		
Tenant Relocation (Rent Differential & Moving)				20	\$10,250	N/A	N/A	\$ 205,000		
Commercial Relocations		1			\$20,000			\$ 20,000		
USACE Relocation Benefits for MWD								\$25,000		
Total Number of Relocations (100%)		1	37	20						
Relocation Administrative Costs					Total Relocs. = 58 (\$10,000 per relocation)		Total Benefits Admin. Costs =	\$ 924,900		
					No. of Septics = 0		Total Septic Raising =	\$0		
Raising of Septics (None need to be raised under this alternative)					Cost to raise each = \$16,000					
							TOTAL RELOCATION COSTS	\$1,504,900	SUMMARY OF RE COSTS	
Assumptions for all alternatives:									Lands Imps./Admin. GRAND TOT	\$24,589,800
1) If any portion of a parcel required for acquisition within an alternative footprint, the entire parcel will be acquired.									Relocation Costs & Admin. TOTAL	\$1,504,900
2) Actual acquisition costs will be used for Corps and SFPMO owned lands. Estimates for all others will be done by appraisal.									Gross RE Costs This Alt.	\$26,104,720
3) Where real estate interests are required over FAA and USDA tracts, it will be done by easement instead of fee acquisition.									Less USACE MOW Acq. \$	\$2,205,200
4) 50 of the houses are assumed to be below the 10-Yr. Flood elevation level. And they would either be raised in place or required relocations, depending on alternative.									Less SFPMO Acq. Costs	\$9,342,510
5) Assume all septic systems and wells will have to be raised.									Less USACE Admin. Costs	\$5,200,000
Additional Assumptions for Alternative 6C:									Value for Contingency	\$12,684,010
a) Mobile homes are considered personal property moves.									x Contingency (25)	\$3,171,000
										\$15,855,013
									Plus USACE Acq. Costs	\$2,378,200
									Plus SFPMO B.S. Acq. Costs	\$9,342,510
									Plus USACE Admin. Costs	\$5,200,000
									TOTAL W/CONTINGENCY	\$29,225,723

Table A16
Real Estate Costs – Alternative 6D

TOTAL IN 8.5 SRIA	ACRES		PARCELS								
Less Acres Now > 10 Yr Flood Elev.	6413	574	1984								
Less New Acq. > 10 Yr Flood Elev.											
Net Acres Required for this Alternative	2681										
				FEE SIMPLE ACQUISITION			FLOWAGE EASEMENTS				
LANDS & IMPROVEMENTS	Total Required Acres for AL 6	Acres Yet to be Acquired	Number of Parcels	No. Required Fee Simple Acres	Unit Value	Estimated Value Fee Simple	No. Acres Flow. Easement Required	Unit Value	Estimated Value for Flowage Easements	Acquisition Items	TOTAL COSTS
Less Acres Already Acquired:											
Crops of Engineers	663	0	259	663	Prev. Acq. USACE	\$2,370,200					
State-SFWMD	489	0	190	489	Prev. Acq. SFWMD	\$9,342,510					
Total Already Acquired	1132		419	1132							
Net Acres Yet to Be Acquired	1749	1749	602								
Other Federal Acres											
FAA	0	0	0	0	\$5,590	\$0	0	\$5,500	\$0		
USDA	0	0	0	0	\$5,590	\$0	0	\$5,190	\$0		
Water-Code Grants	0	0	0	0	\$5,590	\$0	0	\$5,190	\$0		
Privately-Owned Acres	1749	1749	602	1749	\$5,590	\$15,947,810	546	\$5,190	\$5,017,740		
Total Acres											
Imps. To Be Acquired:											
Residential Improvements				87	\$87,000	\$7,569,000	0	\$87,000	\$0		
Agric./Com. Imps (incl. Graves/structures)				215	\$1,700	\$370,800	0	\$1,760	\$0		
TOTALS FOR THIS ALT.	2681	3499	1921	2681	TOTAL ALL FEE	\$36,615,920	546	TOTAL ALL ESMTS	\$5,017,740	TOTAL ALL LANDS & IMPS.	\$41,633,660
Total New Acquisition		1749	602	1749	Total New Fee	\$24,515,810	546	Total New Esmts	\$5,017,740	Total New Lands & Imps. =	\$29,534,550
ADMINISTRATIVE COSTS											
Crops Administrative Costs (constant)					Acres for Admin.		Admin. Per Tract	Subtotals Admin Costs		USACE ADMIN	\$1,200,000
SFWMD Admin - Willing Sellers					702		\$5,000	\$4,212,000		SFWMD ADMIN	\$5,012,000
SFWMD Admin - Through Eminent Domain					90		\$30,000	\$1,800,000			
				Parcels =	0	762	Parcels =	\$6,012,000		GRAND TOTAL	\$49,345,660

Table A16 (Continued)
Real Estate Costs – Alternative 6D

RELOCATIONS (P.L. 91-646)	Total Imps. To Be Acquired	Total Commercial or Business Reloc.	Residential Owner Relocations (RHP's plus move costs)	Residential Tenant Relocs.(Rent Diff. & Moving)	Relocation Cost Per Household or Commercial Unit	% Estimated to Be Lost Resort	Lost Resort Incr. Factor (at 35%)	Total Relocation Estimate
Owner Occupied Residential--Mobile (Regl. Housing & other full benefits)	14		14		\$28,000	65%	7875	\$ 493,863
Owner Occupied Residential--Fixed (Regl. Housing & other full benefits)	21		21		\$28,000	65%	7875	\$ 695,494
Non-Owner-Occupied Residential--Mobile (move costs of structure and contents-- see note a)	25		21		\$10,000	N/A	N/A	\$ 210,000
Non-Owner-Occupied Residential--Fixed (move costs of contents only)	35		31		\$5,000	N/A	N/A	\$ 155,000
Tenant Relocation (Rent Differential & Moving)				20	\$10,250	N/A	N/A	\$ 205,000
Commercial Relocations		1			\$20,000			\$ 20,000
USACE Relocation Benefits for MWD								\$25,000
Total Number of Relocations (100%)		1	87	20				
Relocation Administrative Costs					Total Reloc. = (\$10,000 per relocation)	100	Total Benefits Admin. Costs=	\$ 1,774,156 \$ 1,080,000
Raising of Septics (None need to be raised under this alternative)					No. of Septics = Cost to raise each=	30 \$16,000	Total Septic Raising =	\$480,000
							TOTAL RELOCATION COSTS	\$3,204,156
Assumptions for all alternatives:							SUMMARY OF RE COSTS	
1) If any portion of a parcel required for acquisition within an alternative footprint, the entire parcel will be acquired.							Lands /Imps./Admin. GRAND TOTAL	\$49,345,660
2) Actual acquisition costs will be used for Corps and SPWMD owned lands. Estimates for all others will be done by appraisal.							Relocation Costs & Admin TOTAL	\$3,204,156
3) Where real estate interests are required over FAA and USDA tracts, it will be done by easement instead of fee acquisition.							Gross RE Costs This Alt.	\$52,629,816
4) 50 of the houses are assumed to be below the 10-Yr Flood elevation level. And they would either be raised in place or require relocation, depending a alternative.							Less USACE MOW Acq. \$	\$2,278,200
5) Assume all septic systems and wells will have to be raised.							Less SPWMD Acq. Costs	\$9,342,510
							Less USACE Admin. Costs	\$1,700,000
							Value for Contingency	\$39,259,106
Additional Assumptions for Alternative B:							x Contingency (25)	\$9,814,777
a) Mobile homes are considered personal property moves.								\$49,073,883
							Plus USACE Acq. Costs	\$2,278,200
							Plus SPWMD S Acq. Costs	\$9,342,510
							Plus USACE Admin. Costs	\$1,700,000
							TOTAL W/CONTINGENCY	\$62,494,580

Table A17
Social Impact Assessment Summary

ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6B	ALTERNATIVE 6C	ALTERNATIVE 6D	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9
Physical Impacts - Project Implementation											
Total acreage required	663	663	5,825	6,413	6,413	4,346	1,743	2,881	5,838	5,803	663
Fee Simple	663	663	663	1,514	6,107	4,196	1,743	2,335	303	3,790	663
Acquired*	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)	(1,132)
To be Acquired	(5)	(5)	(5)	(952)	(4,875)	(3,084)	(611)	(1,209)	(303)	(2,898)	(5)
Life Est. with Flow. Easements	0	0	0	245	0	0	0	0	0	0	0
Flowage Easements	0	0	4,893	4,854	306	150	0	546	4,404	2,013	0
Note: * For some alternatives lands acquired to date exceed actual needs											
Total residential units affected	1	1	1	41	514	319	41	87	1	258	1
Resident occupied units	(1)	(1)	(1)	(17)	(208)	(129)	(17)	(35)	(1)	(194)	(1)
Non-resident units	(5)	(5)	(5)	(24)	(306)	(190)	(24)	(52)	(5)	(154)	(5)
Commercial activities affected	0	0	0	4	4	0	0	0	0	0	0
Agricultural acreage affected	0	0	0	0	2,642	1,175	27	295	0	980	0
Acres above 1 in 10 yr. Flood zone	574	574	574	574	574	574	574	574	574	574	574
Add. Ac. above 1 in 10 yr. Fld. Zone	90	79	14	0	0	1,643	0	0	0	36	79
Total Ac. above 1 in 10 yr. Fld. Zone	634	653	588	574	574	2,217	574	574	574	610	653
Cost of Alternative	\$38.6 million	\$33.9 million	\$224.6 million	\$132.8 million	\$179.8 million	\$186.1 million	\$61.4 million	\$96.3 million	\$134.6 million	\$153.8 million	\$39.9 million
Land Use											
Total Flood Free Land (in acres)											
Residential	15	20	18	17	17	115	17	17	17	18	21
Commercial	2	2	2	2	2	16	2	2	2	2	2
Agricultural	547	553	512	499	499	1,505	499	499	499	528	561
Communications	0	0	0	0	0	306	0	0	0	0	0
Easements	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vacant	66	68	66	66	66	274	66	66	66	61	68
Totals	634	653	588	574	574	2,217	574	574	574	618	652
Social Impacts											
Total owner-occupied population	853	853	853	853	853	853	853	853	853	853	853
Total absentee owner pop. (est.)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Total population (est.)	2,106	2,106	2,106	2,106	2,106	2,106	2,106	2,106	2,106	2,106	2,106
Total owner-occupied households	208	208	208	208	208	208	208	208	208	208	208
Total absentee owner households (est.)	306	306	306	306	306	306	306	306	306	306	306
Total households (est.)	514	514	514	514	514	514	514	514	514	514	514
Resident population displaced	4	4	4	78	853	529	78	144	4	426	4
Resident households displaced	1	1	1	17	208	129	17	35	1	184	1
Affected absentee owners	0	0	0	98	1,253	779	98	213	0	631	0
Affected absentee owner household	0	0	0	24	306	190	24	52	0	154	0

Table A17 (Continued)
Social Impact Assessment Summary

Scenario 1 - No Density Constraints											
LAND USE CHANGES											
Land Use Conversions											
Vacant to Residential	635 acres*	635 acres*	635 acres*	635 acres*	0	205 acres	697 acres*	763 acres*	635 acres*	261 acres	635 acres*
Agricultural to Residential	0	0	0	0	0	901 acres**	0	0	0	754 acres**	0
SOCIAL IMPACTS											
Impacted Residential Households	1	1	1	17	208	129	17	35	1	104	1
Impacted non-res. Households	0	0	0	24	306	190	24	52	0	154	0
ECONOMIC IMPACTS											
Project "Footprint" Area											
Resid. Agricul. Annual Income Lost	\$0	\$0	\$0	\$0	\$2,620,000	\$1,130,000	\$28,000	\$221,000	\$0	\$890,000	\$0
Non-Resid. Agr. Annual Income Lost	\$0	\$0	\$0	\$0	\$3,840,000	\$1,660,000	\$38,000	\$305,000	\$0	\$1,310,000	\$0
Resident Relocation Costs	\$28,000	\$28,000	\$28,000	\$480,000	\$5,820,000	\$3,512,000	\$475,000	\$980,000	\$28,000	\$2,912,000	\$28,000
Area Above 1 in 10 yr. Flood Zone											
Resid. Agricul. Annual Income Lost	\$0	\$0	\$0	N/A	N/A	\$892,000	\$0	\$0	\$0	\$747,000	\$0
Non-Resid. Agr. Annual Income Lost	\$0	\$0	\$0	N/A	N/A	\$1,211,000	\$0	\$0	\$0	\$1,087,000	\$0
Resident Relocation Costs	\$0	\$0	\$0	N/A	N/A	\$0	\$0	\$0	\$0	\$0	\$0
NOTES: * Based on a density of 3.65 acres / residential unit. ** Agricultural acreage removed from production											
ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6B	ALTERNATIVE 6C	ALTERNATIVE 6D	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9
SCENARIO 2 - DENSITY ORDINANCES ENFORCED											
LAND USE CHANGES											
Land Use Conversions											
Vacant to Residential	45 acres	45 acres	35 acres	0	0	205 acres	35 acres	35 acres	35 acres	40 acres	45 acres
Agricultural to Residential	547 acres**	563 acres**	512 acres**	0	0	1,310 acres**	499 acres**	499 acres**	499 acres**	529 acres**	561 acres**
SOCIAL IMPACTS											
Impacted Residential Households	1	1	1	17	208	129	17	35	1	104	1
Impacted non-res. Households	0	0	0	24	306	190	24	52	0	154	0
ECONOMIC IMPACTS											
Project "Footprint" Area											
Resid. Agricul. Annual Income Lost	\$0	\$0	\$0	\$0	\$2,620,000	\$1,130,000	\$28,000	\$221,000	\$0	\$890,000	\$0
Non-Resid. Agr. Annual Income Lost	\$0	\$0	\$0	\$0	\$3,840,000	\$1,660,000	\$38,000	\$305,000	\$0	\$1,310,000	\$0
Resident Relocation Costs	\$28,000	\$28,000	\$28,000	\$480,000	\$5,820,000	\$3,512,000	\$448,000	\$980,000	\$28,000	\$3,510,000	\$28,000
Area Above 1 in 10 yr. Flood Zone											
Resid. Agricul. Annual Income Lost	\$540,000	\$590,000	\$510,000	N/A	N/A	\$1,297,000	\$490,000	\$490,000	\$490,000	\$520,000	\$590,000
Non-Resid. Agr. Annual Income Lost	\$800,000	\$820,000	\$740,000	N/A	N/A	\$1,906,000	\$730,000	\$730,000	\$730,000	\$770,000	\$820,000
Resident Relocation Costs	\$0	\$0	\$0	N/A	N/A	\$0	\$0	\$0	\$0	\$0	\$0
NOTES: * Based on a density of 3.65 acres / unit. ** Agricultural acreage removed from production											

**CENTRAL AND SOUTHERN FLORIDA PROJECT
MODIFIED WATER DELIVERIES TO
EVERGLADES NATIONAL PARK, FLORIDA**

8.5 SQUARE MILE AREA

ADDENDUM A

TO THE

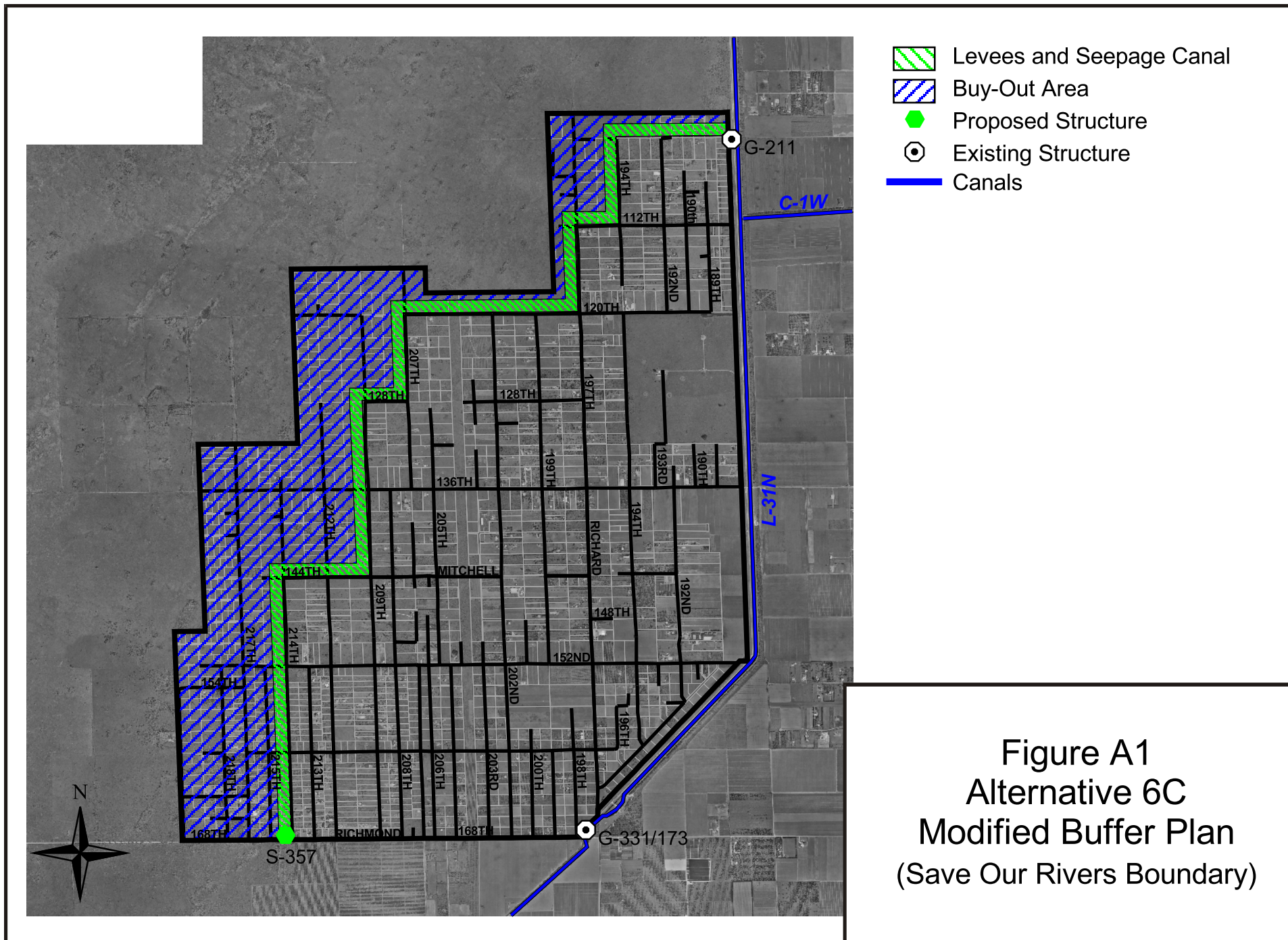
**DRAFT GENERAL REEVALUATION REPORT AND
DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT**

FIGURES

**DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA**

May 2000



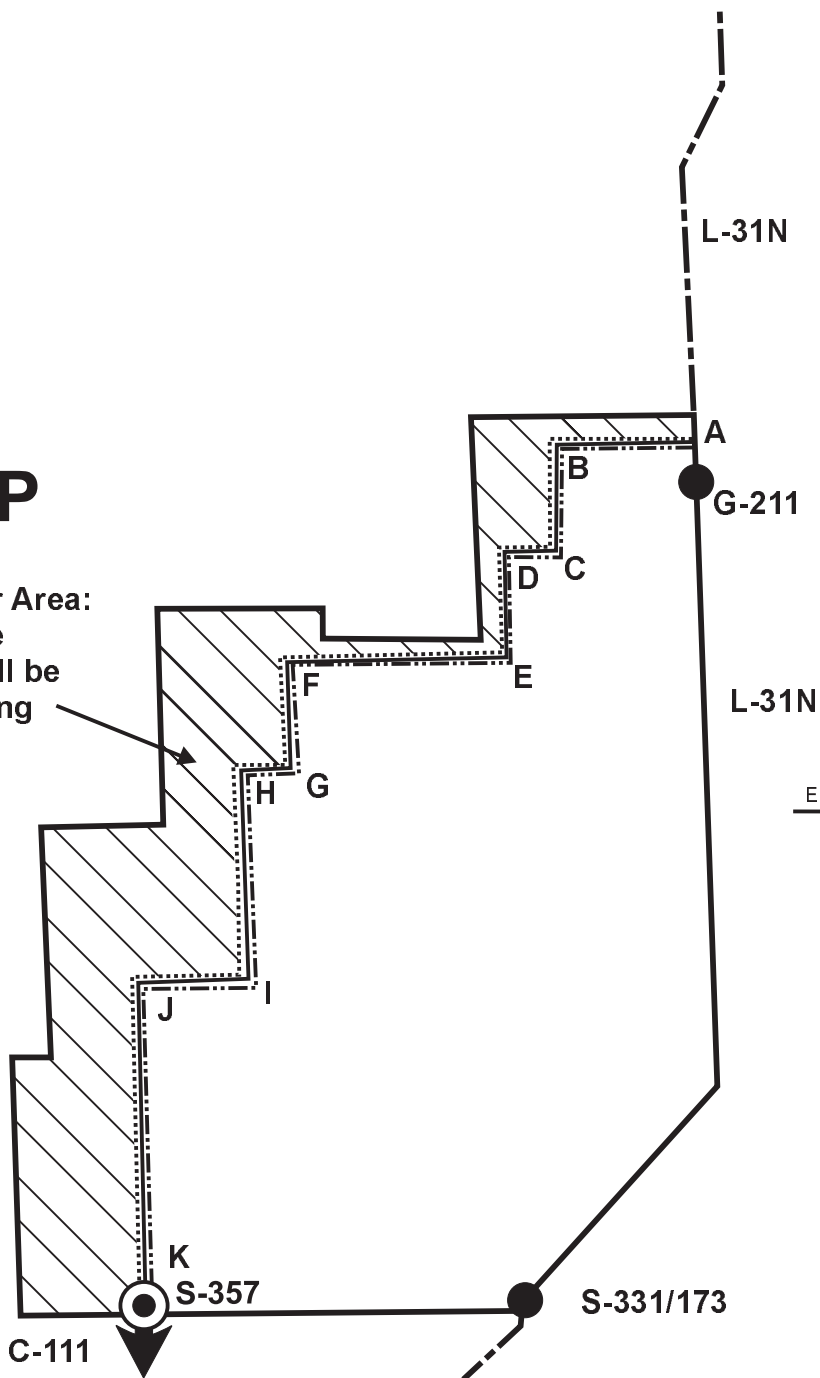





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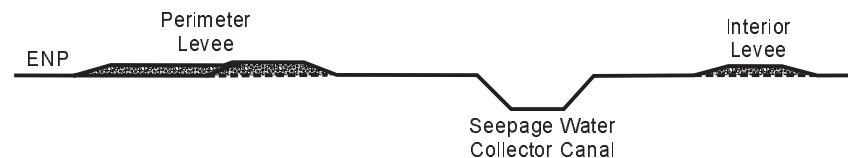
Proposed Buffer Area:
Exact real estate
requirements will be
determined during
design.



LEGEND

- Project Boundary
- Proposed Perimeter Levee
- Proposed Seepage Canal
- - - - Proposed Interior Levee
-  Proposed Buy-Out Areas
- Existing Structure
- Proposed Structure

NOTE: Area west of SW 202nd Ave. would be utilized buffer. S-357 discharges into spreader canal 2000' south of 168th Street.



Typical Section

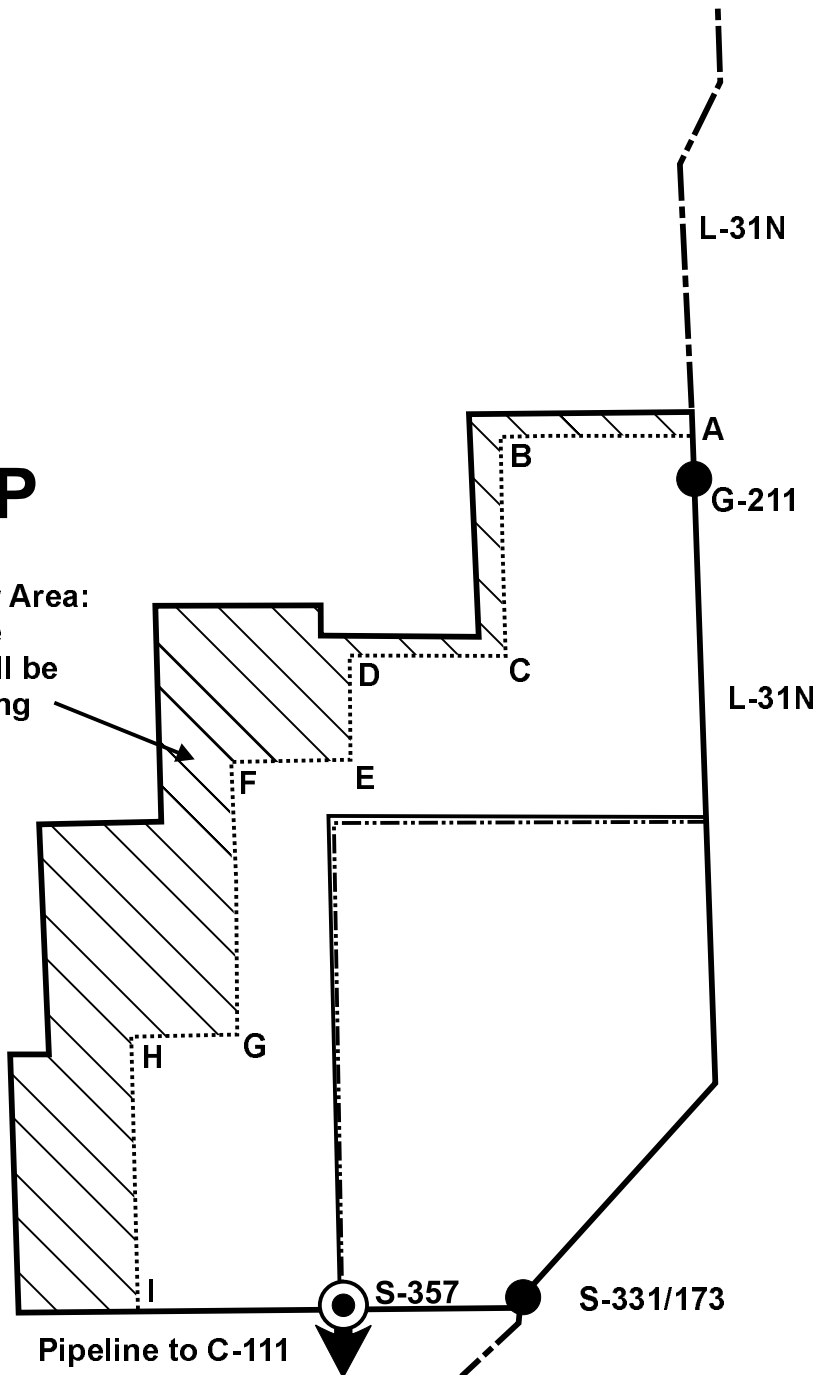
Figure A3
Alternative No. 6C
Modified Buffer Plan
(Save Our Rivers Boundary)



Not To Scale

ENP

Proposed Buffer Area:
Exact real estate
requirements will be
determined during
design.



LEGEND


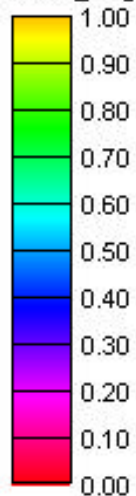
- Project Boundary
- Proposed Perimeter Levee
- Proposed Seepage Canal
- · - · - Proposed Interior Levee
-  Proposed Buy-Out Areas
- Existing Structure
- ⊙ Proposed Structure

Figure A4
Alternative 6D
Modified Buffer Plan

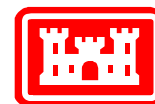
Pln6C_Mitigate



“White” areas are fully mitigated compared to Base 83



Not to Scale



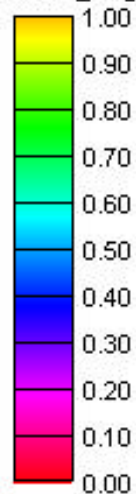
Mitigation Map
Plan 6C - Week 26

Figure A5

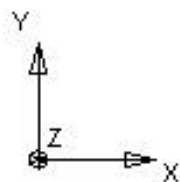
US Army Corps of Engineers
Jacksonville District

Note: D13Rbc_Plan6C_95_95ops
Contours as shown on Legend above

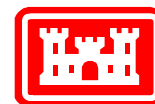
Pln6C_Mitigate_Bs95



“White” areas are fully mitigated compared to Base 95



Not to Scale



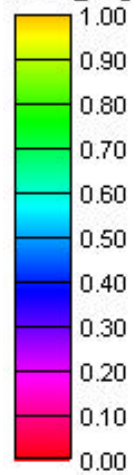
Mitigation Map
Plan 6C - Week 26

Figure A6

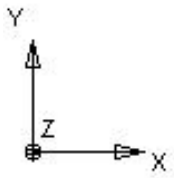
US Army Corps of Engineers
Jacksonville District

Note: D13Rbc_Plan6C_95_95ops
Contours as shown on Legend above

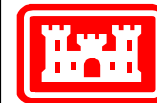
Pln6D_Mitigate_Bs83



“White” areas are fully mitigated compared to Base 83



Not to Scale



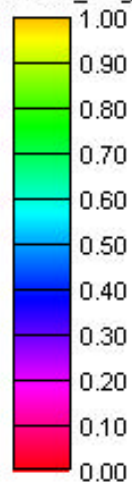
Mitigation Map
Plan 6D - Week 26

Figure A7

US Army Corps of Engineers
Jacksonville District

Note: D13Rbc_Plan6D_95_95ops
Contours as shown on Legend above

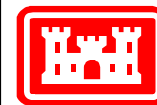
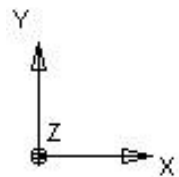
Pln6D_Mitigate_Bs95



“White” areas are fully mitigated compared to Base 95



Not to Scale

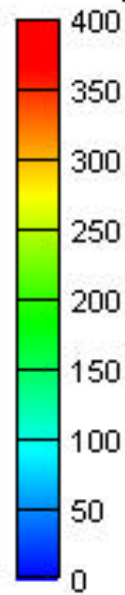
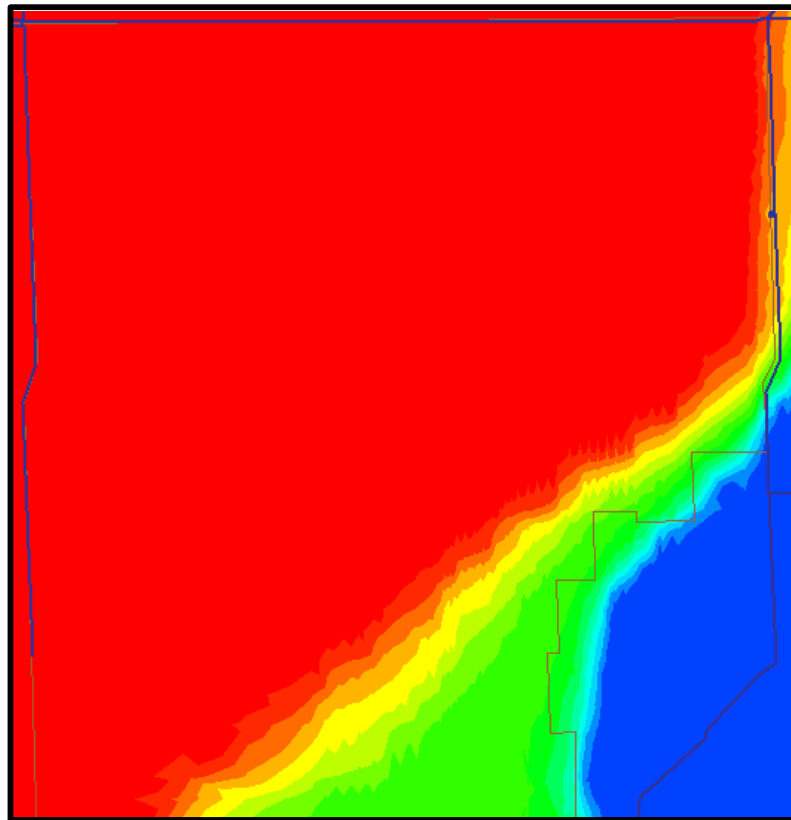


Mitigation Map
Plan 6D - Week 26

Figure A8

US Army Corps of Engineers
Jacksonville District

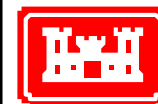
Note: D13Rbc_Plan6D_95_95ops
Contours as shown on Legend above



Hydroperiod



Not to Scale



Future Conditions
with Plan 6D in place

Figure A9

Note: D13Rbc_plan6D_95ops

US Army Corps of Engineers
Jacksonville District